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**At-risk mental state for psychosis in help-seeking
young people: an investigation into underlying affective and
interpersonal risk factors**

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ABSTRACT

Background: Considering recent advances in the field of early detection and intervention in young people with increased levels of psychotic symptoms seeking help, this thesis proposes that early attachment insecurity triggers an inability to regulate emotional distress, to engage in positive interpersonal interactions with others, to use adaptive coping mechanisms and to manage social support appropriately. These constructs appear to be linked to psychosis; however, considering continuity between subthreshold psychotic symptoms and the later development of psychosis, it is vital to understand if these underlying affective and interpersonal mechanisms increase the risk of psychosis in help-seeking young people.

Objectives: This study was cross-sectional and investigated the following research questions: 1) Does attachment insecurity signpost the risk of developing psychosis? 2) Do coping strategies, interpersonal difficulties, social support and emotional distress have an indirect effect on the relationship between attachment insecurity and the risk of developing psychosis?

Methods: A total of 76 help-seeking young people were recruited from Community Mental Health Services in Edinburgh. All participants completed a number of questionnaires exploring their coping strategies, interpersonal problems, perceived social support and emotional distress. A semi-structured interview was undertaken, to assess their socio-demographic background. The Comprehensive Assessment of At-Risk Mental States was administered and coded to assess their risk of psychosis and associated psychopathology, while path analysis was used to analyse the data and to address the research questions.

Results: The profile of help-seeking young people in this sample (n=76) was made up of individuals with a moderate degree of difficulties in relation to coping strategies employed to manage stress and interpersonal problems dealing with others, moderate levels of emotional distress and discrepancies between their ideal and received social support. From the total help-seeking sample, the attachment

dimensions anxiety and avoidance were relatively high. These young people were found to have had mild, psychotic-like experiences, especially in the domains associated with unusual thought content and perceptual abnormalities. When considering the subgroup of help-seeking young people with an at-risk mental state (ARMS) (n=46), the results revealed that this group had high levels of difficulties in interpersonal relationships, relied on non-productive coping strategies, presented emotional distress levels of clinical importance and also had discrepancies in their ideal and received social support. From the subsample of help-seeking young people with an ARMS the attachment dimensions anxiety and avoidance were reasonably high. These young people were found to have had moderately severe psychotic experiences, especially in the domains associated with unusual thought content and perceptual abnormalities. Path analysis revealed that attachment insecurity directly predicted psychotic symptoms in the total sample but not in the subgroup of young people with an ARMS. Emotional distress played a partially moderating role between attachment insecurity and the severity and distress associated with disorganised speech and perceptual abnormalities in the total sample but not when considering only those with an ARMS, while interpersonal problems did not mediate the relationship between attachment insecurity and the risk of psychosis in either group. Discrepancies between ideal and received social support fully mediated the relationship between attachment insecurity and the distress associated with disorganised speech in the total sample but not when considering those with an ARMS. The tendency to use less adaptive coping strategies was found to mediate directly the relationship between attachment anxiety and the distress associated with perceptual abnormalities in young people with an ARMS, albeit not in the total sample.

Discussion: The clinical and theoretical implications of these results are discussed within the clinical staging model for intervention in psychosis. The findings strongly indicate that clinicians should take into consideration the mechanisms of attachment, coping strategies and social support, as well as the deleterious effects of associated emotional distress, when working with young people with increased levels of psychotic symptoms.

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DECLARATION

I hereby declare that I am the sole author of this thesis and that the work described within, except where specifically acknowledged, is my own and has not been submitted in any previous application for a degree at this or any other University. The information obtained from sources other than this study is acknowledged in the text or included in the references.

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SECTION I: LITERATURE REVIEW

Identification of the Literature

Literature for the present thesis was identified mainly by accessing the following databases: MEDLINE, EMBASE, PubMed, PsychINFO and CINAHL, which were all recommend by the University of Edinburgh, School of Health in Social Sciences librarian. Additionally, references from retrieved papers were examined, in order to include further relevant papers and/or book chapters. Search engines such as Google Scholar were also accessed.

Nomenclature

Throughout this thesis different terminologies are used to designate an at-risk mental state (ARMS). Although a distinct effort was made to use the term at-risk mental state or the acronym ARMS, it is important to mention to the reader that the terms and/or acronyms *at-risk*, *clinical-high-risk* (CHR), *high-risk* (HR) and *ultra-high-risk* (UHR), where relevant, are also employed synonymously. Moreover, to facilitate reading, when considering patients with a first episode of psychosis, the terminologies *early onset schizophrenia*, *early psychosis* and/or the acronym *FEP* are used as synonyms.

INTRODUCTION

Psychotic disorders occur at a frequency of around 1% in the general population (WHO, 1998; Kessler et al., 2007). The most common syndrome within the spectrum of psychotic disorders, schizophrenia, is estimated to have an incidence of 15.2% in every 100,000 people, whereas affective psychosis is estimated to occur at 9.2% in every 100,000 people (McGrath et al., 2008; Kirkbridge et al., 2006, respectively). This prevalence reflects an important need to detect as promptly as possible all potentially new cases of emerging psychosis (Bendall et al., 2008; Philips et al., 2000), not only because of the significant cognitive and functional impairment it causes to the individual, but also due to the negative impact it has on all individual contexts (family and social networks) and the economic burden it generates in the form of high costs to the health services (Rössler et al., 2005; McGorry & Yung, 2010; WHO, 1998; Boeing et al., 2007). The National Institute for Health and Clinical Excellence (NICE) estimates the prevalence of psychotic disorders in children aged between 5 and 18 years to be 0.4%, with schizophrenia accounting for 24.5% of all psychiatric admissions in young people aged 10–18 years (NICE, 2013). NICE estimates suicide rates of nearly 15% among people with schizophrenia, a lifelong unemployment rate that varies between 50 and 75% and reduced life expectancy. The additional cost to the healthcare system for one person with schizophrenia is estimated to reach over £50,000 per year, every year, throughout their lifetime (Welsh & Brown, 2013, NICE, 2013).

Preventing psychosis, by detecting and intervening at an early stage, particularly in young people, is a goal that has been debated for many years and has grown in terms of international interest (Parker and Lewis, 2006). Evidence of a critical period for psychosis resulted in the development of strategies for the intensive treatment of individuals experiencing psychosis for the first time (Birchwood, 1998). This resulted in the establishment of early intervention services worldwide.

Nonetheless, an alternative line of research has considered the possibility of identifying and treating psychotic disorders even earlier (Yung et al., 1994). This has led to an interest in developing “close in” strategies for detecting young people with a presumably at-risk mental state (ARMS) for psychosis. Since the development of validated criteria to identify a help-seeking population at increased risk of psychosis (Yung et al., 2005), researchers and clinical teams around the world have been working intensively over the past two decades in many fields of knowledge, in order to achieve an agreed structure of which factors predict the transition to psychosis from an at-risk mental state to the disorder itself (e.g. Addington, 2004; Bechdolf et al. 2010; Klosterkötter et al. 2005; McGorry et al. 2002; Ruhrmann et al. 2010).

This led to the possibility of introducing the “attenuated psychosis syndrome” into the new DSM-5 (APA, 2013). However, APA experts considered that data available from studies were not sufficiently accurate to drive forward the inclusion of a “new syndrome,” because the symptoms and criteria were able to “fit” into other clinical diagnoses found in the mental health taxonomy. The APA suggested that further studies would be necessary, to achieve consistent criteria (Fusar-Poli et al., 2014), and so the need for research in early psychosis has never been greater. Declining transition rates in ARMS populations in recent studies have shed light on the need to continue research into sub-syndromal markers in those at risk of psychosis, in order for the “syndrome” to be properly validated (Yung et al., 2007; Ruhrmann et al., 2010, Fusar-Poli et al., 2012) and to create targeted early intervention strategies.

Psychotic disorders usually emerge during late adolescence and early adulthood, with 80% of first episodes occurring between 16-30 years of age, although there is a marked increase in prevalence between the ages of 15-17 (Thomsen, 1996; Hollis, 2000; Berger et al., 2006; Vos and Begg, 2003; extensively reviewed by Kessler et al., 2007; Amminger et al., 2006; Yung et al., 2007).

Specifically in Scotland, Boeing et al. (2007) examined the prevalence of and cross-sectional disabilities, needs and service provisions relating to adolescent-onset psychosis. Of the 103 young people contacted, 53 participants, their carers and

keyworkers were interviewed. The results revealed that the three-year prevalence of adolescent-onset psychosis was 5.9% per 100,000 of the general population.

In this period of life, adolescents face several developmental issues (e.g. learning to regulate emotions, negotiating successful relationships with peers), and it is their ability to negotiate these tasks effectively, using their internal and external resources, that will make their development more likely to follow a normative course. However, difficulties or failures in negotiating these demands can place adolescents on a path to psychopathology (Kessler et al., 2007; Ingram and Price, 2010). It is recognised that psychotic disorders in adolescence have widespread effects on functioning and are often associated with premorbid vulnerabilities (Hollis, 2003), behavioural problems, specific learning difficulties and substance abuse (Hambrecht & Hafner, 2000).

In this context, this period of life has been of intense interest to developmental psychopathology researchers investigating psychotic phenomena, with Bowlby's attachment theory recently being acknowledged as a framework for conceptualising the role of social cognition, interpersonal experiences and the regulation of affect in the development of interpersonal functioning, psychological distress (Mallinckrodt & Wei, 2005) and the increased risk of developing psychosis (e.g. Varese et al., 2012; Berry et al., 2007).

There is evidence that young people at risk of psychosis have an insecure attachment style (Gajwani et al., 2013); however, it remains unclear in relation to which underlying psychological mechanisms are responsible for attachment insecurity leading to an increased risk of developing psychosis. In this thesis it is proposed that maladaptive coping strategies, interpersonal difficulties, a lack of perceived social support and emotional distress play an indirect effect in the relationship between attachment insecurity and the development of psychotic symptoms in help-seeking young people suffering from adverse life events.

This investigation further aids knowledge regarding the affective and interpersonal risk factors for psychosis, and it may potentially help to integrate these psychological mechanisms into current early intervention protocols.

This section will be divided into seven chapters. Chapter I will provide an explanation of the psychosis construct, including the historical development of the concept and its nosological approach. The chapter then approaches the paradigm of early identification and early intervention paradigm of psychosis from the critical period hypothesis perspective to the concept of indicated prevention.

Chapter II will present a comprehensive state of the art regarding the construct of At-Risk Mental States for psychosis with an important relevance to the concept of psychotic like experiences and the Psychosis Continuum Model.

Chapter III will present the current state of early interventions for populations with an At-risk mental state for psychosis with a particular emphasis to the clinical staging approach.

Chapter IV will present a summary of risk factors for psychosis taking in consideration a bio-psychosocial perspective.

Chapter V will present the rationale regarding the associations between interpersonal problems, coping mechanisms and social support as core constructs for the study of increased risk of psychosis.

Chapter VI presents the current recognition of the role of emotional distress as a core feature with a need for further investigation and also presents the Cognitive Model for the Development of Psychotic symptoms as important framework to be considered.

Chapter VII will present the core framework based Bowlby's Attachment Theory as the framework to explain how dysfunctional schemes developed from early attachment experiences are related with an increased risk for psychosis.

Chapter I: Psychosis Conceptualisation and the Early Detection Paradigm

This chapter includes the conceptualisation of psychosis as an explanatory term and the possible manifestations of abnormal symptoms that an individual may experience. It also includes a detailed description of the syndromes and generic symptoms that make up the criteria for psychotic disorders in mental disorder classification systems (DSM-5, APA, 2013; ICD-10, WHO, 1993).

Additionally, it incorporates a brief understanding of the historical development, phenomenology and nosology of the concept of psychosis and its growing differentiation, from neuroses through to modern/current classification systems (DSM-5 American Psychiatric Association, 2013; and the ICD-10, World Health Organisation, 1993). This brief description provides an understanding of psychosis terminology and its associated symptoms throughout this thesis.

The chapter will then proceed to examine problems around the paradigms of early identification and early intervention in early psychosis, and it will also look at the premorbid and prodromal phases. The chapter culminates with a description of the central concept of this thesis, i.e. the at-risk mental phase and evidence supporting the operationalisation of the criteria and its ability to detect young people who are presumably at a higher risk in the near future of developing a psychotic disorder.

1.1. Defining Psychosis

Psychosis is a severe disturbance of reality testing, which is evidenced by a lack of insight into the pathological nature of hallucinations or delusions, or by cognitive and behavioural disorganisation (Kaplan et al. 1994). Psychosis is a descriptive term rather than a nosological entity, and it is one of the two types of functional psychotic disorders that produce psychotic symptoms such as schizophrenia and related psychotic disorders, as well as mood/affective disorders such as bipolar affective

disorder (DSM-5, APA, 2013).

In the ICD-10 (WHO, 1993, p.10), the term “psychotic” has been retained as a convenient explanatory term and *“does not assume a role of psychodynamic mechanisms, but simple indicates the presence of hallucinations, delusions, or a limited number of severe abnormalities of behaviour, such as gross excitement and overactivity, marked psychomotor retardation, and catatonic behaviour.”*

Correspondingly, and for the purposes of this thesis, psychosis assumes the modern definition as proposed by the Oxford English Dictionary, namely that psychosis is a *“severe mental illness, characterised by loss of contact with reality (in the form of delusions and hallucinations) and deterioration of intellectual and social functioning, occurring as a primary disorder or secondary to other diseases, drug ingestion, etc.”*(www.oxforddictionaries.com/definition/english/psychosis).

According to the modern classification system DSM-5, the major phenomenology of psychosis includes the involvement of a variety of abnormal experiences (usually divided into positive and negative symptoms) in which there is misinterpretation and misapprehension of the nature of reality. There are five implicit domains, specifically: disturbances in perception (**hallucinations**), disturbances regarding belief in and interpretation of the environment (**delusions**) and disorganised speech patterns (**disorganised thinking**), **disorganised or abnormal motor behaviour** (including catatonia) and **negative symptoms** (Heckers et al., 2013; DSM-5, APA, 2013, p. 87).

Hallucinations are perception experiences in the absence of any stimulus. They occur in all sensory modalities (auditory, visual, tactile and olfactory), with auditory episodes being the most common. Auditory hallucinations are usually experienced as voices, whether familiar or unfamiliar, that are perceived as being distinct from the individual’s own thoughts.

Delusions are fixed or falsely held beliefs that are still retained after exposure to contradictory evidence. Delusions involve **persecutory beliefs** (the most common),

which can refer to a belief that one is going to be harmed or harassed by an individual or group. **Referential delusions** are a belief that certain gestures, comments or environmental cues are directed at oneself, and a **grandiose delusion** occurs when an individual believes – falsely – that he or she has exceptional abilities, wealth or fame. **Erotomaniac delusion** is when an individual believes falsely that another person is in love with him or her. **Nihilist delusions** involve the conviction that a major catastrophe will occur, and **somatic delusions** focus on preoccupations regarding health and organ function.

Disorganised thinking represents a set of phenomena referring to speech which is presented to the listener as jumbled or incoherent, tangential or with loosened semantic associations.

Grossly disorganised or abnormal motor behaviour (including catatonia) may manifest in child-like silliness through to unpredictable agitation, while catatonia signals a marked decrease in reactivity to the environment, ranging from resistance to instruction (negativism) to maintaining a rigid, inappropriate or bizarre position, to a complete lack of verbal and motor responses (mutism and stupor). It can also involve unreasonable and excessive motor reactivity without cause (catatonic excitement).

Negative symptoms account for a substantial proportion of morbidity associated with schizophrenia, but they are less prominent in other psychotic disorders. Negative symptoms include emotional apathy or *reduced emotional expression*, lack of drive or *avolition*, poverty of speech or *alogia*, social withdrawal or *a-sociality* and *anhedonia* or the inability to experience pleasure (DSM-5, APA, 2013, p.88; NICE, 2013).

The Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5, American Psychiatric Association, 2013), classifies psychotic disorders as: schizotypal (personality) disorder, delusional disorder, brief psychotic disorder, schizophreniform disorder, schizophrenia, schizoaffective disorder, substance/medication-induced psychotic disorder, psychotic disorder due to medical

condition, catatonia associated with another mental disorder, catatonic disorder due to another medical condition, unspecified catatonia, other specified schizophrenia spectra and other psychotic disorders, and unspecified schizophrenia spectra and other psychotic disorders (DSM-5, APA, 2013).

Moreover, and although beyond the scope of the present thesis, it is worthwhile considering that evidence has shown that other disorders exacerbate psychotic symptoms, such as pervasive developmental disorders (e.g. Sporn et al., 2004; Clarke et al., 1989), Klinefelter syndrome (e.g. DeLisi et al., 2005), 22q11-deletion syndrome (e.g. Basset and Chow, 1999; Baker and Skuse, 2005; Vorstman et al., 2006), schizotypal and borderline personality disorders, PTSD (as defined in the DSM-5, APA, 2013) and multiplex developmental disorder (e.g. Clarke et al., 1989; Stahlberg et al., 2004).

However, before modern systems gained from this categorisation, the classification of psychoses underwent a series of clinical observations worth noting.

1.2. Historical Development of the Psychosis Concept

Until the beginning of the 19th century, the term “neurosis” was present in the psychiatric literature as a descriptor of diseases affecting the nervous system. The modern concept of psychosis dates from the mid-19th century, when it was defined in relation to four dichotomies: psychoses versus neuroses, unitary versus multiple, functional versus organic and exogenous versus endogenous (Berrios, 1987).

At the beginning of the 19th century, psychoses were considered from a unitary perspective, and their diverse clinical presentations were explained in terms of endogenous and exogenous factors. Canstatt has introduced the term “psychosis” into the psychiatric literature in 1841, referring to it as a “psychic neurosis.” Canstatt emphasised the psychic manifestation of a disease in the brain. Von Feuchtersleben (1847) is also credited as a precursor of the term as a synonym for psychopathy.

During the 19th century, psychoses were considered as diseases with a combination of causes affecting both physical and personality processes (explored in Bürgy, 2008). Both Canstatt and Feuchtersleben considered that somatic limitations in the brain and psychic vulnerability acted as the origins of disorders, and it wasn't until later in the century that the term "psychosis" was continuously applied to describe mental disorders and insanity.

At the start of the 20th century, Emil Kraepelin (1919) combined the formerly distinct entities of dementia paranoides, catatonia and hebephrenia to form the concept of 'dementia praecox' (Klosterkotter et al., 2008; Gaebel and Zielasek, 2008). Furthermore, he proposed that psychoses could be divided into dementia-praecox and manic-depression (the equivalents of modern-day terminology relating to schizophrenia and bipolar and affective mood disorders, respectively). The central idea of Kraepelin's thesis was the deteriorating element, whereby positive symptoms were caused by endogenous deterioration (dementia constituent) and the presence of an affective component based on faulty heredity. This separation was made in order to consider a large group of intermediary psychoses corresponding to contemporary schizoaffective disorders (Angst & Gamma, 2008; Hoff, 2008).

Eugen Bleuler, in 1911, renamed the group of mental disorders 'group of schizophrenias'. Bleuler considered that Krapelin's "dementia praecox" was misleading, as psychoses can occur in distinct periods of a person's life, and they do not always develop into the mental deterioration characteristic of dementia (Stotz-Ingenlath, 2000). The main thrust of his theory was in the splitting of a personality with loss of contact with reality from its affective consequences as the main symptom occurring in the schizophrenia group.

The modern American nosology (DSM) was essentially based on Bleuler's four categories, in which schizophrenia was conceptualised as a disturbance in ambivalence, association, autism and affect, with the former three fitting positive symptoms and the latter fitting the negative manifestations of schizophrenic phenomena (Lindenmayer & Khan, 2006). Both Krapelin and Bleuler subdivided endogenous psychoses into manic-depressive and schizophrenic disorders, based on

the course of the disease (Boyle in Bental, 1992, p.13).

One of the most significant contributors to modern differential diagnosis was the German Psychiatrist Karl Jaspers. In his book, *General Psychopathology* (1913), he argued that psychotic experiences are not comprehensible but only explainable, and the diagnosis of psychotic symptoms should be made based on their form rather than on their content (e.g. what matters is the presence of an auditory hallucination, not the content of the hallucination). To Jaspers, schizophrenia was a brain-based illness, with symptoms lying far beyond all forms of empathy or psychological comprehension, with a common element being ‘the *ununderstandable*’ (Burg, 2008). Jaspers highlighted the key symptom of *delusion* that he considered to occur in its “primary” form, without an obvious cause, and which was seemingly incomprehensible in terms of normal mental processes. Secondary delusions were classified as pertaining to the patient’s belief in the reality of delusional objects or a completely detached world, by the person’s background, current situation or mental state (Jaspers, 1963, p.581 cited in Sass, 2014).

Following Jaspers’ phenomenological model, Schneider (1959) considered that for the diagnosis of schizophrenia (and after the exclusion of any organic or toxic cause) it is necessary to include sufficient indicators of psychosis. These were termed “Schneiderian first-rank symptoms” specific to apparently pathognomonic symptoms such as auditory hallucinations (hearing one’s thoughts spoken aloud, auditory hallucinations that comment on one’s behaviour and auditory hallucinations in which two voices carry on a conversation), thought broadcasting, thought withdrawal, insertion and interruption, delusional perception, somatic hallucinations and ideas of passivity (Burg, 2008; Lindenmayer & Khan, 2006).

The Schneiderian approach to categorising schizophrenia (analogous to Kraepelin’s entities) influenced all diagnostic systems developed thereafter, particularly the World Health Organisation ICD and the American DSM’s (APA, 1984-2013).

Summarising, different ways of classifying psychoses have been observed throughout the past two centuries. Nonetheless, recently, researchers have combined previous approaches to the comprehension of psychoses, by recognising the need to “blend” psychosis and neurosis. This has been due to the tendency to abandon a crystallised approach in favour of a more integrative consideration of psychotic phenomena (Gaebel and Zielasek, 2008; see McGorry, 2009 for complementary reflection on this topic).

Furthermore, evidence of the “*occurrence of emotional dysfunction prior and accompanying psychosis indicates that neurosis contributes to the development of the positive symptoms*” (Freeman et al., 2003; Garety et al., 2001). These facts provide good arguments for research into the underlying risk factors associated with psychosis from a dimensional perspective.

1.3. The Problem with the Nosological Approach

As described above, nosological approaches assume that psychotic disorders are crystallised entities with specific symptom representations and with inherent duration criteria (Jackson & McGorry, 2009). In this context, the classification of psychotic disorders remains a topic of considerable debate, with researchers disagreeing on a dimensional versus a categorical classification approach to syndromes (Jablensky 2012; Gaebel and Zielasek, 2008).

The categorical approach admits that the syndrome is concrete and stable across all stages of the disorder, and this is not the case when looking at the earlier stages of psychotic disorders, where symptoms are highly non-specific (Möller, 2008). This creates the need to identify in the early stages specific symptoms across a dimensional continuum, from normal to pathological behaviour, and from a severity continuum perspective (a dimensional approach) (please see the notable review by Möller, 2008).

To overcome this issue, the newly revised DSM-5 (APA, 2013) integrates a dimensional approach to diagnosis and classification with the existing categorical approach, thereby creating a hybrid psychiatric diagnosis model. While previous editions of the DSM were based exclusively in the present versus absent diagnosis dichotomy (e.g. DSM III, APA, 1980), the integration of a dimensional approach allows for the assessment of symptom severity and provides higher degrees of validity, reliability and stability over time (Stein, 2014; APA, 2013; Aboraya, 2012).

Moreover, since psychoses such as schizophrenia are considered to be pathogenically heterogeneous disorders with multiple symptoms and associated “comorbidities,” there is a further debate on whether or not the term “psychosis” should be abandoned in favour of research targeted at particular symptoms (Tapp et al., 2001; Jablensky, 2012).

Several arguments in the psychiatric literature do not lend themselves to achieving any form of consensus. Thus, and as recently considered by Stein (2014), in order to enable early intervention in psychiatric disorders, and for the purposes of this thesis, specifically in relation to psychosis, it is necessary to undertake integrative assessments incorporating a multiple range of factors that are thought to be implicated in the development of the disorder. These include the exploration of endophenotypes (i.e. genetic, neurocognitive, psychopathological) and exophenotypes (i.e. social and interpersonal contexts), as well as the consideration of the cost-effectiveness of clinical assessments and necessary interventions.

For the purpose of the present thesis, and as considered by Jablensky (2012), it is pertinent to continue to carry out research from a dimensional perspective into early specific sub-syndromal markers that may amplify knowledge of the pathogenesis of psychotic disorders (Myin-Germeys and van Os, 2007; see also Jablensky, 2012, for detailed arguments on this topic).

2. The Early Identification and Early Intervention Paradigm in Psychosis

The early phases of psychosis have become a target for early identification and have unlocked the prospect for treatments addressing psychotic symptoms, comorbid psychopathology and the social and occupational impairments involved in the development of the disorder.

Psychosis is associated with a high rate of mortality, with suicide accounting for a large percentage of these deaths. A recent systematic review conducted by Hor & Taylor (2010), with regards to suicide rates in people suffering from psychotic spectrum disorders, found a lifetime risk of suicide rate of 4.7%, with the only protective factor for suicide being the provision of and adherence to effective care. The authors argued that the prevention of suicide in those suffering from psychotic disorders may rely on detecting those individuals at risk and treating comorbid psychopathology, as well as providing the best available treatment to reduce or eliminate psychotic symptoms (Hor & Taylor, 2010).

Furthermore, evidence shows that the outcomes for those affected by psychotic spectrum disorders are poor, both in terms of the course of symptomatology and impact on the quality of life (Cannon et al., 1997; Law et al., 2005; Cotton et al., 2010). The impact of psychosis in these features is even worse if we consider the critical period of adolescence (Hollis, 1995; 2000).

2.1. First-Episode Psychosis and the Critical Period Hypothesis

Evidence shows that longer durations of untreated psychosis (DUP) (the time between the onset of the first episode of psychosis (FEP) and the start of intervention) are associated with poor clinical and social outcomes (e.g. Johnstone et al., 1986; Crow et al., 1986; Perkins et al., 2005; Craig et al., 2000; Rabballo, 2011; Yung, 2004; Marshall et al., 2005). This has been found specifically longitudinally in

adults (Larsen et al., 2000; Perkins et al., 2005), as well as in child and adolescent populations (e.g. Hollis 1995; Fraguas et al., 2014).

Furthermore, from a developmental perspective, the early onset of psychosis has been found to arise in a context of dysfunctional and negative affectivity and to be associated with less effective premorbid coping styles and more depressive symptoms than late onset (Kholer et al., 2007).

These associations have given rise to the “critical period hypothesis” (Birchwood et al., 1998; Birchwood & Fiorillo, 2000), which proposes that the course of psychotic disorders during the first three to five years following an initial episode predicts longer-term outcomes at 20 years (Birchwood et al., 1998).

Evidence supporting the critical period hypothesis, which sheds light on the early intervention paradigm, comes from prospective follow-up studies in first-episode patients. These studies were elucidative in showing that this period sees relapse recurrence, treatment resistance symptomatology and a worsening in social and occupational impairment (e.g. Robinson et al., 1999; Zipursky et al., 2014; Davidson et al., 1999). A recent meta-analysis, conducted by Zipursky et al. (2014), shows that the discontinuation of antipsychotic treatment in FEP patients is associated with the risk of relapses, thus highlighting the need for an early approach to treating symptoms.

In this regard, and as argued by Hafner et al. (1995), the level of disability that develops during the early phases of psychosis creates a ‘ceiling for recovery’, while early intervention could actually reduce functioning impacts for first-episode patients. Hence, there are substantial benefits in devising an early intervention approach (important to review in this respect is Wyatt et al., 2001).

2.2. Early Intervention in First-Episode Psychosis

Early intervention in FEP comes from the theoretical position that ‘psychotic disorders are dynamic, psychobiosocial, reversible processes, where the psychotic breakdown is only one stage in the illness process, which can be prevented, delayed and reversed’ (Johannessen in Read et al., 2004 p.319).

Based on the critical period hypothesis, FEP studies signify a major shift of attention in early intervention studies of populations with a diagnosed psychotic disorder directed toward the prevention of relapse and chronicity (Crow et al., 1986; Newton, 1992, cited in Jackson & Birchwood, 1996). Results from these researches have provided support for the development of mental health services with the capacity to offer treatment to young people (aged 14-35 years) within the first three years of psychosis. More specifically, early intervention services aim at detecting emerging symptoms, in order to reduce DUP and to improve access to effective treatments. These mental services, employed to support FEP individuals, were first established in Australia (EPPIC) through so-called “early intervention in psychosis” (EIP) services (or EIS), but they were soon implemented worldwide.

In the UK, awareness of the cost-effectiveness of the early intervention paradigm (EIP versus TAU), and evidence of shorter DUP, recovery and the maximisation of social functioning, was appraised by the National Institute for Health and Clinical Excellence (NICE), which acknowledged the benefits of the EIP (e.g. Garety et al., 2006; McCrone et al., 2001; McGowan et al., in Brooker and Repper, 2009), even though there was some scepticism about its paradigm (e.g. Verdoux, 2001; Bosanac et al., 2009). Results provided by a randomised controlled trial with 144 FEP patients, which measured clinical variables and the associated cost of care in an early intervention service in London, revealed that total mean costs were £11,685 in the early intervention group and £14,062 in the standard care group. In this study, when costs were combined with improved vocational and quality of life outcomes, the results revealed that early intervention would have a very high

likelihood of being cost-effective when compared with standard care (McCrone et al., 2010).

Evidence shows some contrasting results in terms of DUP reduction, before influencing poor clinical outcomes in FEP (as reviewed systematically in Marshall et al., 2010; in Bird et al., 2010 and in Lloyd-Evans et al., 2011; Garety et al., 2006), with researchers suggesting that there might be an influence in relation to different pathways to care (e.g. Bechard-Evans, 2007; Anderson et al., 2010) (a notion explored further in this thesis in point 3.6). However, findings from the EDEN study, which evaluated the implementation and impact of EIS across England for variables such as DUP, fidelity with the EIS model, service engagement over two years and the impact of discharge on outcomes for FEP patients, revealed that the introduction of early intervention services decreased DUP six months following the onset of psychosis (Birchwood et al., 2014; Marshall et al., 2014).

Nonetheless, researchers and EIP clinicians note that some patients referred to specialist services rapidly progress into psychosis, while others never become ill, thus providing a good argument for an even earlier intervention paradigm aimed at working to prevent onset (as stated by McGorry et al., 2008).

2.3. Early Detection in Psychosis: Evidence of a premorbid, prodrome and an at-risk mental state period in the development of the disorder.

The idea of early detection and intervention in psychosis, to prevent the onset of the disorder, is not new. Sullivan, for instance, in 1927, stated '*I feel certain that many incipient cases might be arrested before the efficient contact with reality is completely suspended, and a long stay in institutions made necessary*' (Sullivan, 1927, reprinted 1994, p.135, cited in Yung et al., 2004). Moreover, in Kraepelin's influential considerations, the onset of schizophrenia does not start off merely with the first psychotic episode; rather, the specificity of the psychotic phenomena develops through transitional phases and from rather uncharacteristic prodromal

symptoms (Klosterkötter et al., 2008). As proposed by McGorry (2006), the course of psychosis can be subdivided into three distinct phases: premorbid, prodromal and florid psychosis.

2.3.1. Premorbid Phase

Clinical evidence has shown that most psychotic disorders, such as schizophrenia, begin with a premorbid period of altered functioning or symptomatology, before the onset of pure or threshold psychosis (Rabinowitz et al., 2002). As mentioned above, in this premorbid phase important personal and social context deficits can mark the trajectory of individual symptomatology and indicate where early intervention could be established (Birchwood et al. 1998). Thus, this premorbid period is potentially important from a preventive perspective, because if it could be recognised and then treatment given at an early stage, the course of the illness may be altered (Philips et al., 2000; Yung et al., 2005).

In terms of symptomatology, the premorbid period has been found in retrospective epidemiological cohort studies in children, adolescents and adults with schizophrenia to be a period of stable social and cognitive disturbances in evidence a long time before the first episode of psychosis (Haas and Sweeney, 1992; Malmberg et al., 1998; Schaeffer and Ross, 2002; Davidson, 2001; Engqvist and Rydellius, 2008; Lay et al., 2000).

Furthermore, retrospective studies on premorbid adjustment in first-episode patients are elucidative of the stability of symptom functioning before onset, and of an association between poor premorbid functioning and more severe negative symptoms, as well as more severe cognitive manifestations of illness during the first episode (e.g. Haas and Sweeney, 1992; Larsen et al., 2000; Rabinowitz et al., 2002; MacBeth and Gumley, 2008).

In support of a developmental perspective on transitions from the premorbid to the prodrome, Rabinowitz et al. (2002), in a study of young people experiencing a

first episode of psychosis, found that some disturbances long preceded the episode. In total, 88% of the patients had experienced onset after the age of 18, with 84% showing a disturbance in functioning, relative to the functioning of normal comparison subjects, before age 18, almost 70% before age 15 and 58% before age 11.

Davidson (1999) argued that individuals affected by psychosis are likely to display continuous deterioration in relation to social functioning from childhood through to adolescence, just as the first episode of psychosis progresses. In this study, the authors found that only 15% of the subjects (those with deteriorating premorbid functioning) showed a clear transition from a higher to a lower level of social functioning. Hence, the data provided cautious support for the existence of a subgroup of patients with gradual premorbid social deterioration and a subgroup lacking developmental progress.

Transitions from premorbid to prodromal manifestations – and then to the emergence of symptoms that define the first episode of psychosis and its subsequent diagnosis – are not always clearly distinct points in time or distinctive illness-related events.

In this regard, it is difficult to distinguish the premorbid from the prodromal phase, since, as argued by van Mastrigt and Addington (2002), studies that characterise the premorbid period may introduce confounding biases by wrongly assigning prodromal symptoms to premorbid dysfunction. It is now accepted that other influences, such as family structure and education or access to care, might affect when the diagnosis occurs, hence determining the length of the premorbid and prodromal manifestations as well as determining which manifestations are classified as premorbid, prodromal or part of the first psychotic episode (Rabinowitz et al., 2002).

2.3.2. Prodromal Phase

As mentioned above, potential premorbid risk markers are highly heterogeneous and do not identify a typical prodrome. The premorbid period can be distinct from the prodromal phase. The term “prodrome” itself is a clinical term used to describe early symptoms that an individual experiences, before there is a marked and full-blown syndrome relating to a disorder (Yung et al., 2004). In contrast with the premorbid period, the prodromal is defined by its lack of stability and a worsening course of psychosocial impairment culminating in the onset of true psychosis. The prodromal period can last from less than one year to over four years (Varsamis and Adamson, cited in Yung et al., 2004) or even longer, in which time symptoms appear, such as loss of interest, avoiding the company of others, neglecting school or work and being irritable and oversensitive.

Research is extensive on the symptoms and signs associated with the prodrome, but the most frequent prodromal symptoms described in retrospective studies are: reduced attention and concentration, reduced drive and motivation, depression, sleep disturbance, anxiety, social withdraw, suspiciousness, deterioration in role functioning and irritability (Norman et al., 2005; Riecher-Rossler et al., 2006; Hafner et al., 1992; and Hambrecht et al., 1994, summarised in Yung and McGorry, 1996). This was found in studies that prospectively followed patients with schizophrenia and retrospectively examined the prodromal characteristics that lead to psychosis relapse (Yung et al., 2004).

Other lines of evidence (Huber et al., 1980) describe that prodromal symptoms are characterised by “basic symptoms” – subjectively experienced abnormalities in cognition, attention, perception and movement, also described as ‘self-experienced neuropsychological deficits’ (Klosterkotter et al., 1996). These basic symptoms have given rise to the Bonn Scale for the Assessment of Basic Symptoms (BSABS, Klosterkotter et al., 1997), which assesses a wide range of clinical manifestations usually found in the prodromal phase (details can be found in point 2.3.2. of the present chapter).

Regarding a developmental pathway for the progress of psychosis from across the premorbid, prodrome and then the development of psychosis, age of onset needs to be taken into consideration. A retrospective study conducted by Schaeffer & Ross (2002), using medical records and interviews with parents of children with childhood-onset schizophrenia (<13 years old), revealed a similar symptom sequential trajectory from premorbid psychopathology, and the prodrome (early school-age period of non-specific impairments in attention and behaviour, most notably affecting school functioning), followed by the development of psychosis. In addition to clinical symptoms, other factors precipitate the transition from the premorbid to the prodrome, specifically the educational levels of patients and their families, socioeconomic status, healthcare provision and caregiver availability (Davidson, 2001; Hambrecht et al., 1994).

However, these non-specific symptoms do not help disorder diagnosis, and neither are they typical of a healthy individual. Moreover, they are just as disturbing to the family as disabling to the patient as the more elaborate symptoms develop, such as delusions and hallucinations (ICD-10, WHO, 1993, p.14; Ballon et al., 2007; Yung et al., 1998; Yung et al., 2003; Yung et al., 2005).

As mentioned above, the manifestation of the premorbid signs, the onset of the prodrome, the emergence of symptoms that define an episode of the illness and the established full syndrome (including formal diagnosis) do not necessarily overlap or occur at clearly distinct points in time (as argued by Davidson, 2001). In this context, problems exist in trying to identify young people in the prodromal phase of an incipient psychotic disorder. Firstly, “prodrome” is a retrospective concept, i.e. a prodromal phase of illness is only established by the later development of the fully developed disorder. Secondly, as described above, many of the symptoms are highly non-specific for psychosis, and they could quite easily appear in any condition, such as depression (Philips et al., 2000; Yung et al., 2004).

2.4. Indicated Prevention

The concept of primary prevention in the common taxonomy refers to the application of health promotion/specific protective interventions that modify risk factors in order to reduce the incidence of a particular disease (Ingram and Price, 2010). In the case of psychosis, primary prevention is not yet a realistic proposition, which is why studies are required in terms of providing an ongoing explanation of risk factors, and for the purpose of the present thesis, especially those risk factors that are modifiable *via* specific psychological interventions (Ingram and Price, 2010). This line of research can be considered “indicated prevention,” a probabilistic and deterministic approach based truly on risk factors, which aims at including clinically significant signs and early symptoms, as long as the clinical representation does not meet the criteria for diagnosing a psychotic disorder (McGorry et al., 2003; Ruhrmann et al., 2010).

The purpose of indicated prevention is to improve prognosis, to prevent progression or worsening of the disorder and to minimise any distress, morbidity, comorbidity, disability or costs associated with the diagnosis of psychosis (McGorry et al., 2009). However, more research on trait markers is needed, with a view to sharpening predictive ability (and therefore targeting future preventive interventions) in samples of young people with presumptively prodromal syndromes (Ingram and Price, 2010; Ruhrmann et al., 2010; Addington, 2004; Yung et al., 2005).

Chapter II: At-Risk Mental State For Psychosis

In the indicated prevention framework, arguments that if a prodrome typical of and specific to schizophrenia could be reliably identified, and shown to be uncommon in those with other psychiatric disorders and those with no disorders at all, lead to the assumption that it would be justifiable to include a prodrome among the possible criteria for the schizophrenia spectrum and related psychotic disorders (ICD-10, WHO, 1993, p.14; Philips et al., 2000; Berger et al., 2006). However, although from retrospective studies into the psychosis prodrome were accepted in the DSM-III-R, this “category” was abandoned in the DSM-IV and also from its revised version, DSM-IV-TR (American Psychiatric Association, APA, 1980, 1994 and 2000, respectively), due to a lack of diagnostic accuracy and to the poor predictive values of the prodrome.

Still in the context of the prodrome, The Edinburgh High Risk Study attempted to study and monitor longitudinally several children and adolescents with first- and second-degree relatives suffering with a psychotic disorder, in order to adopt a genetic predisposition approach to the psychosis prodrome (Hodges et al., 1999; Johnstone et al., 2000; Johnstone et al., 2005). However, results from monitoring this high-risk approach revealed low transition rates (10%), the need for long follow-ups, sometimes with young people that never become psychotic, and overly expensive. This led to an alternative identification research strategy, focused in the period of the life span with the peak of incidence of psychotic disorders and also in the help-seeking behaviour.

To overcome these issues, and aggregating all the evidence mentioned in retrospective studies of patients with prodromal symptomatology, a new area of research began in Melbourne through the work of Yung, McGorry et al. with the establishment in 1994 of the Personal Assessment and Crisis Evaluation (PACE) Clinic.

PACE intended to develop a ‘close in strategy’ for the prospective identification of help-seeking young people aged between 14 and 30 years, who were referred to healthcare services because they appeared to be at imminent risk of developing a psychotic disorder (McGorry, 2006; Yung et al., 1996; Parker & Lewis, 2006; Philips et al., 2000). The PACE group operationalised criteria combining state and trait factors. State features fall into two groups: attenuated psychotic symptoms (APG) and briefly limited intermittent psychotic symptoms (BLIPS), while trait factors involve a family history of psychosis in a first degree relative or schizotypal personality disorder in an identified patient. The PACE group also aimed at developing interventions for this “ultra-high” risk (UHR) group targeted at preventing or delaying the onset of psychosis (Yung et al., 1996, 2004, 2005, 2008; Philips et al. 2000; Morrison et al., 2004; Parker & Lewis, 2006; Ingram and Price 2010).

As mentioned previously, since the early symptoms and signs of psychosis tend to occur across a broad spectrum, detection is complex due to the possibility of a high false-positive rate, i.e. not all people who seem to be experiencing prodromal symptoms will make the transition to a psychotic disorder (Yung et al., 2005).

In this context it must be borne in mind that we are dealing prospectively with degrees of risk and the mental state thought to be a prodrome of psychosis. This state is best designated as an *at-risk mental state* (ARMS), a ‘*state that confers high, but not inevitable risk of development of psychotic disorder in the near future*’ (Yung et al., 2005).

In this context, an ARMS is conceptualised as ‘a *state-risk factor for a full-blown psychosis... the presence of the syndrome implies that the affected person is at that time more likely to develop psychosis in the near future than someone without the syndrome*’ (Yung et al., 2004; Yung et al., 2007) (the reader must be cautious while interpreting this definition, as an at-risk mental state for psychosis is not a taxonomical syndrome but merely an indicative risk terminology).

More specifically, an ARMS is operationalised *via* those factors defined as “ultra-high-risk criteria.” These “UHRs” of the first-episode psychosis prodrome aim at defining an imminent risk of psychosis through identifying: 1) attenuated psychotic symptoms (APs), namely subthreshold experiences and attenuated positive psychotic symptoms during the past year, 2) brief and limited intermittent psychotic symptoms (BLIPS), namely episodes of true psychotic symptoms that have not lasted longer than a week and have spontaneously abated, and 3) trait and state risk factors (TSs), i.e. the sufferer has a first-degree relative with a psychotic disorder or the identified client has a schizotypal personality disorder and they have experienced a significant decrease in functioning over the preceding year (Yung et al., 2003; Yung et al., 2004; Yung et al. 2006; Morrison et al., 2002; Addington, 2004). This assumes a dimensional perspective to the symptoms and that they lie on three continua: intensity, frequency and duration.

The comprehensive assessment of at-risk mental states (CAARMS) was designed in order to provide a comprehensive assessment of psychopathology believed to indicate the imminent development of first-episode psychosis, and to determine if an individual meets UHR status (Yung et al., 2005).

The CAARMS is a semi-structured interview comprising seven subscales: positive symptoms, cognitive change, emotional disturbance, negative symptoms, behavioural change, motor and physical changes and general psychopathology (although only the positive symptoms subscale is required for ARMS identification) (CAARMS is described in more detail in the Methodology chapter of this thesis).

Combining some predictive variables yielded a strategy for psychosis prediction with good sensitivity (86%), specificity (91%), positive predictive value (80%) and negative predictive value (94%), within six months (Yung et al., 2003).

The first studies using the CAARMS found transition rates of around 35% to 50% within six- and 12-month follow-up periods (with increasing follow-up times increasing transition rates to 17.9% within six months and 34.6% within 12 months, despite the provision of minimal supportive counselling, care management and

antidepressant medication, if required), thereby acknowledging the significant predictive validity of the CAARMS and UHR criteria in identifying individuals at risk of developing psychosis (Yung et al., 1994, Yung et al., 1996; McGorry et al., 2002; Yung et al., 2003; Yung et al., 2004). Despite criticism levelled against the inclusion of BLIPS criteria (because it is a presumably diagnosable psychotic disorder), and the CAARMS psychosis threshold (Warner, 2005), the Melbourne criteria are now widely accepted worldwide in research and clinical practice (as discussed in Simon et al., 2013).

3.1. Adoption and Adaptation of the Ultra-High-Risk criteria

To improve identification of the ARMS population, and to enhance understanding of the pathogenesis of psychosis for progress in early intervention protocols, other research sites globally have adopted and further adapted the PACE UHR criteria and developed assessment tools for the UHR population (Bechdolf et al., 2008; Cornblatt et al., 2002).

The PRIME group in North America, for instance, has developed prodromal syndrome (COPS) criteria operationalised via the structured interview for prodromal symptoms (SIPS) approach (Miller et al., 2003). The SIPS aims at identifying attenuated positive symptoms and contains three domains: the scale of prodromal symptoms, a global assessment of functioning and a DSM-IV schizotypal personality disorder checklist. Like the PACE criteria, the COPS focuses on subthreshold positive symptoms as a basis for inclusion in the symptoms defined groups. The first study conducted by the PRIME group found a transition rate of 54% within 12 months (Miller et al., 2002).

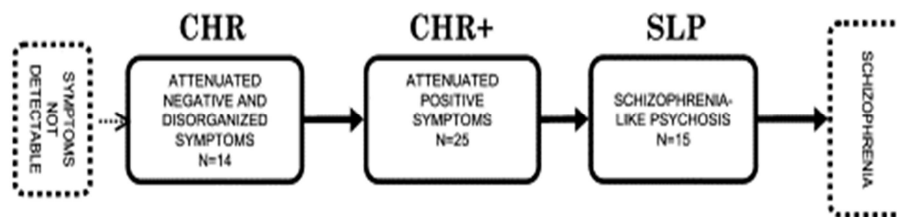
The Bonn Group, as a further example, developed the Bonn Scale for the Assessment of Basic Symptoms (BSABS) (Gross et al., 1987; Huber & Gross, 1989). The BSABS was designed based on Huber's early concept of "basic symptoms" (basic symptoms, subjectively, are experiences of abnormalities in the realms of cognition, attention, perception and movement, or 'self-experienced

neuropsychological deficits' (Klosterkotter et al., 2001) and tries to identify individuals thought to be even at an earlier stage in the development of psychosis (assigning individuals into either an early or late initial prodromal state) (Klosterkötter et al., 2001). The BSABS consists of 92 items spread over six subscales: dynamic deficiencies A&B, cognitive anomalies, perceptual and motor experience, coenaesthesia, central vegetative disturbances and auto-protective behaviour). The BSABS has been shown to be predictive of later schizophrenia; for example, in a longitudinal study conducted by Klosterkötter et al. (2001), over a mean period of 9.6 years, 49.4% of the prodromal patients moved on to schizophrenia. In this study, the absence of prodromal symptoms excluded later schizophrenia, with a probability of 96% (sensitivity: 0.98; false-negative predictions: 1.3%), whereas the presence of prodromal symptoms predicted schizophrenia at a probability of 70% (specificity: 0.59; false-positive predictions: 20%).

The Bonn Group has also operationalised a shorter psychosis prodrome assessment tool, the Schizophrenia Prediction Instrument Adult Version (SPI-A) (Shultze-Lutter et al., 2007), which identifies basic symptoms in a 34-item semi-structured interview comprising six subscales: affective dynamic disturbances, cognitive attentional impediments, cognitive disturbances, disturbances in experiencing the self and surroundings, body perception disturbances and perception disturbances. Furthermore, the German group has developed the Schizophrenia Prediction Instrument – Child and Youth (SPI-CY) version (Schultze-Lutter et al., 2010), which identifies basic symptoms in a semi-structured interview with four subscales: adynamia, perception disturbances, neuroticism, thought and motor disturbances.

The Recognition and Recovery Programme (RAP) also defines an approach to identifying UHR individuals termed as being at “clinical high-risk” (CHR). Based on genetic risk studies, with schizophrenia as a target disorder, the CHR distinguishes three groups of individuals: 1) those who have attenuated psychosis symptoms, as measured with the SIPS (CHR+), 2) those at risk and thought to be in

an even earlier stage, who have attenuated negative/disorganised, albeit without psychotic symptoms (CHR-), and 3) those with positive symptoms but who do not meet criteria for schizophrenia (termed “schizophrenia-like psychosis”). The RAP group acknowledges a continuum course of schizophrenia from CHR-, to CHR+ to schizophrenia, as illustrated below in a diagram taken from Cornblatt et al. (2002):



In a study by Lencz et al. (2003), using CHR criteria, the transition rate from CHR+ to psychosis was 26.5% within six months, and in the study by Cornblatt et al. (2002), the transition rate from schizophrenia-like psychosis to schizophrenia was 33%.

The last assessment tool mentioned herein was developed in North America, namely the prodromal questionnaire-brief (PQ-B) (Loewy et al., 2011). The PQ-B is a pre-assessment tool for prodromal psychosis syndromes when followed by a diagnostic interview, in a two-stage evaluation process targeted at help-seeking populations. The research group uses the PQ-B before the SIPS (Miller et al., 2003). The original version (Lowey et al., 2005) had 92 items, but the briefer version has 21 items assessing positive symptoms and social, academic or occupational functioning. The PQ-B has good validity and reliability (Cronbach’s alpha of 0.85) in detecting individuals with an interview-diagnosed prodromal or psychotic syndrome, but it is less sensitive to the threshold between prodromal and full-blown psychosis.

In some research groups the prodromal is combined with the basic symptom concept, e.g. in the Cologne Early Recognition and Intervention project (FETZ; Pukrop et al. 2006 and 2007), the Bruderholz Early Psychosis Outpatient Service (Simon and Umbricht, 2010), the Basel Early Recognition Study (Simon et al. 2009) and the European Prediction of Psychosis Study (Klosterkötter et al. 2005; Nieman et

al. 2007). As in the RAP group, in FETZ researches the prodromal phase comprises an early and a late prodromal phase, with the early prodromal phase being operationalised as having one or more of the following: (1) a functional decline plus genetic risk, (2) a functional decline plus pre- or perinatal complications and (3) basic symptoms, while the late prodromal phase is operationalised as one having: (1) attenuated positive symptoms and/or (2) transient psychotic symptoms.

3.2. Profile of Individuals with an At-Risk Mental State for Psychosis

Individuals who are considered to have an ARMS for psychosis are usually a group of help-seeking young people who make contact with youth-based mental health support services. As anticipated, they frequently present with **high levels of distress and poor functioning** (Yung et al. 2003, 2004, 2008). Results from studies using the global assessment of functioning (GAF, American Psychiatric Association, 1994, measuring levels of severity from 0 to 100) have found that these young people present at initial assessments mean scores of 58, 41, 60, 51 and 56 (Yung et al., 2003; Nelson et al., 2006; Demjaha et al., 2012; Nelson et al., 2011, Lin et al., 2011, respectively), demonstrating considerable impairments when attempting to function in social, occupational and educational domains.

Additionally, impaired functioning has been assessed by the social and occupational functioning assessment scale (SOFAS; Goldman et al., 1992), which is part of the CAARMS (details in the Methodology Section of the present thesis). Lin et al. (2011), using the SOFAS, found scores of 44.66 at baseline. Similar SOFAS scores of 46.9 were found in the study of Bechdolf et al. (2010), in ARMS subjects who at 18 months transitioned to psychosis, thus indicating very low functioning at baseline. Additionally, a low SOFAS score has been associated with poor outcomes in ARMS individuals who transitioned to psychosis at a mean of 7.26 years follow-up (Lin et al., 2011).

In terms of **intake criteria**, studies using the CAARMS indicate that most cases meet the attenuated positive symptoms group (APS). In one of the first PACE

studies, conducted by Yung et al. (2003), 71% of the UHR individuals met the APS criteria (Group 2), 24% met the BLIPS criteria (Group 3), 37% met the vulnerability criteria – trait and state risk (TS) (Group 1) and 29% met the criteria for more than one group.

Other research studies have found similar distributions/proportions across intake groups. It is important herein to report the results of those studies with the largest samples as an example. In the study by Raballo et al. (2011) with 223 ARMS individuals, the authors found in terms of UHR groups that 190 (85.2%) participants were in the attenuated psychotic symptoms (APS) group, 51 (22.9%) were in the trait and state risk (TS) group and 15 (6.7%) were in the brief limited intermittent psychotic symptoms (BLIPS) group. Thirty-two (14.3%) subjects belonged to more than one UHR group.

Furthermore, Lin et al. (2011) found in 230 ARMS individuals that 142 (61.7%) participants met criteria for APS only, 12 (5.2%) met BLIPS criteria only and 32 (13.9%) met trait vulnerability criteria (TS) only. Ten (4.3%) participants met criteria for APS and BLIPS, 28 (12.2) met criteria for APS and TS, one (0.4%) met criteria for BLIPS and TS and four (1.7%) met all three criteria.

The OASIS group found in 122 ARMS subjects that 71.3% met the APS criteria, 14.8% met the APS + BLIPS criteria and 13.9% met the APS + TS criteria (Demjaha et al., 2012). Roughly the same proportions were found in the study by Nelson et al. (2011) with 817 ARMS individuals, whereby 572 (70%) met the APS alone, 117 (14%) met the TS alone, 36(4%) met the BLIPS and 92 (11%) met the APS+TS criteria.

The study by Mason (2004), with 74 young ARMS people, found that 33 met the APS alone, 17 met the BLIPS alone, 13 met the TS alone, five met the APS + BLIPS, five met the TS + APS and one met the BLIPS +TS criteria.

In the study by Broome et al. (2005), with 58 ARMS individuals, 39 met the APS group alone, seven met the BLIPS group alone, one met the TS group alone,

four met the APS + BLIPS, six met the APS + TS group and one met the BLIPS + TS criteria.

As mentioned, risk factors associated with psychosis have been included in ARMS criteria, in order to increase predictive validity. In terms of age, most studies use as an inclusion criterion young people aged between 12-35 years old. Results from the most relevant studies have found mean/median ages of 19, 29.3, 20, 19.1, 19.4, 16.4, 17.8, 17.3 years (Yung et al., 1996; Klosterkötter et al., 2001; McGorry et al., 2002; Yung et al., 2003; Yung et al., 2004; Cornblatt et al., 2003; Miller et al., 2002; Mason et al., 2004, respectively). These mean ages show young people in their early 20s to be the most prevalent group seeking help from services.

3.3. Transition to Psychosis

Worldwide studies from the past ten years were replicated in terms of testing the validity and sensitivity of UHR criteria. Research with ARMS populations has focused specifically on how many individuals make a transition to psychosis in different follow-up periods, and which factors predict this transition. Prospective studies using the CAARMS and the abovementioned UHR criteria in other assessment instruments reveal *conversion rates* in samples of ultra-high-risk youths at between 36%-60% within six to 18 months of follow-up (Klosterkötter et al., 2001; Morrison et al., 2002; Yung et al., 2006; Yung et al., 2003; Yung et al., 2004; Mason et al., 2004).

However, if previous transition rates in the PACE were 34% and 40% at six and 12 months, respectively, in even more recent studies, this transition rate at six months was reduced for up to 10% (Yung et al., 2006). Other research groups observed the same reduction in transition rates (e.g. Raballo et al. (2011), with a follow-up at six months and a conversion rate of 11.6%; Fusar-Poli et al. (2012), 18% at six months).

For example, Cannon et al. (2008), in the North American Prodrome Longitudinal Study, conducted a multi-site longitudinal study (every six months to a

maximum of 30 months) to determine the risk of converting to psychosis in 291 subjects at high clinical risk, by using SIPS criteria. The rate of conversion to psychosis was 35%, with a decelerating trend during follow-ups. However, in a recent study, the presence of clinical high-risk criteria was associated with an enhanced risk of developing psychosis over time, increasing from 18% at six months follow-up, to 22% at 1 year, 29% at two years and 36% after three years (Fusar-Poli et al., 2012).

Some possible explanations for this reduction involve earlier detection (i.e. the expansion of the at-risk paradigm to other mental health teams, private psychiatrists, GPs and even schools culminated in earlier identification of PLEs), poorer follow-up rates, more effective interventions (those targeting PLEs, antipsychotic medication, cognitive therapy or general case management) or a higher rate of false-positive cases within the study samples. Also, different ways of sampling different populations (potentially with different socio-demographic characteristics) may have contributed to the drop in transition rates (Yung et al., in Jackson & McGorry, 2009; Yung et al., 2007; Simon et al., 2013).

These recent studies, showing diminished transition rates, give rise to questions on the issue of the predictive validity of UHR selection criteria and the natural course of the ARMS group. Furthermore, lack of knowledge on outcomes pertinent to UHR individuals who do not make a transition to psychosis and remit from the UHR baseline status nurtures interest in studying this group of individuals. In the largest study published to date, the non-converting group demonstrated significant improvements in attenuated positive symptoms, negative symptoms and social and role function (Addington et al., 2011). In this study, the non-converting group continued to function at a lower level than the comparison non-psychiatric subjects, thereby suggesting that initial CHR status is associated with persistent disability for a significant proportion of this cohort.

To address the role played by remission in these non-transiting CHR individuals, Simon et al. (2011) conducted a meta-analysis of a total of 773 subjects who met initial CHR criteria across eight studies (all using the SIPS), in order to

estimate the magnitude of CHR, with longitudinal clinical remission among the group of non-converters. The results revealed that out of the total sample, 73% did not make a conversion to psychosis at the two-year follow-up, and of these, 46% fully recovered from baseline attenuated psychotic symptoms. Furthermore, the findings suggested that CHR status is associated with a significant amount of remission subjects, which can be accounted for by the effective treatments received, lead time bias, dilution effects and the comorbid effects of other psychiatric diagnoses.

3.4. Predictors of Transition

Knowledge about factors especially associated with the transition to psychosis may assist and guide early detection and early intervention in ARMS patients. Prospective studies focusing on the predictors of transition to psychosis have found, in samples of help-seeking young people with an ARMS, that a decline in general functioning, gender, anxiety, depression, stress, substance use, schizotypal personality features, positive and negative symptoms predicts this change (Yung et al., 2003, 2004, 2006; Amminger et al., 2006;; Cannon et al., 2008). Furthermore, neurocognitive and neurobiological variables have also been found to be transition predictors in studies of young people with an ARMS (Myin-Germmeys and van Os., 2007; Carr, 2006; Philips et al., 2007). Environmental variables such as urbanicity have also been found to play a part in prediction algorithms (van Os et al., 2005).

As already mentioned, evidence from prospective research studies has shown that **poor baseline global functioning** predicts the transition to psychosis at 12 months (Yung et al., 2003, 2004, 2006; Cannon et al., 2008; Velthorst et al., 2009; Ruhrmann et al., 2010). As considered by Yung et al. (2007), young people with poor functioning may be less able to cope with psychotic experiences, more susceptible to depression and distress and more likely to use substances and to have fewer social support networks than young people with better functioning behaviours. This then forms a sequential process whereby psychotic experiences worsen in response to these factors and eventually culminate in a psychotic episode.

In terms of socio-demographic factors, ethnicity and socio-economic status have not been found to be direct predictors of the transition to psychosis. With regards to **age**, although it has also not been found to be a predictor in this respect, in the prospective 12-month study by Amminger et al. (2006), in a sample of young people at high risk of transition to psychosis, the authors identified that an age below 18 was a significant predictor of non-affective psychosis.

Related to this point, while **gender** has not been found in most studies to be a direct predictor of conversion to psychosis, Amminger et al. (2006) examined gender differences and found that female sex was significant predictor after a two-year follow-up. Although not predictive, Lemos-Giraldez (2009) found that ARMS males experience faster and longer deterioration than ARMS females when psychotic symptoms arise. Furthermore, in the prospective study of Wilhite et al. (2008), ARMS males were found to have significantly higher levels of negative symptoms and lower levels of functionality than ARMS females, when baseline and six- and 12-month follow-up time points were considered collectively.

With regards to urbanicity, it has been found to predict the development of psychosis in ARMS individuals living in an urban environment and receiving state benefits (van Os et al., 2005).

A history of substance abuse has not been found to be a direct predictor of transition to psychosis, although it was found to contribute to the psychosis prediction algorithm in the study by Cannon et al. (2008). In the study by Haroun et al. (2006), in a sample of UHR in which 13% converted to psychosis at the one-year follow-up, individuals who displayed a greater severity of sub-syndromal psychotic symptoms and had a history of drug abuse were more likely to make the conversion. In a study by Kristensen and Cadenhead (2007), a history of cannabis and/or nicotine use/dependence was found to be highly associated with the risk of transition to psychosis in five (31.3%) UHR subjects who converted after one year (total sample of the study 48 UHR subjects, 16 with a history of cannabis and nicotine abuse).

Another study (Yung et al., 2004) did not find this association, maybe because the UHR sample had a relatively low base rate of cannabis use. Schäfer et al. (2008) examined the role of substance abuse as a predictor for transitioning to

psychosis in a sample of 81 UHR young people who participated in a randomised controlled trial of Omega-3 fatty acids vs. a placebo, where substance abuse was assessed at baseline and a 12-month follow-up. In this study, the rate of transition to psychosis was 16%. The results revealed that a lifetime of substance abuse was an independently significant predictor of transition to psychosis. However, substance use at baseline was not found to be significant in this respect.

In terms of **positive symptoms**, Yung et al. (2004) found that unusual thoughts, paranoia, perceptual abnormalities and conceptual disorganisation were predictive factors at the 12-month follow-up in a sample of 104 UHR subjects.

Mason et al. (2004), in a sample of 74 UHR subjects, found that odd beliefs and ‘magic thinking’ were predictors of the transition. In the same study, auditory hallucinations were also highly predictive of transition after follow-ups of 12 to 24 months. Amminger et al. (2006) found in those UHR young people with family high-risk, that attenuated and/or brief limited psychotic symptoms at baseline were significant predictors of affective psychosis at 12 months. Similar results were found by Cannon et al. (2008) in another prospective study with 291 high-risk youths (PRIME group, measured with SIPS). The authors identified as predictors of transition to psychosis higher levels of unusual thought content and higher levels of suspicion/paranoia. Rabballo et al. (2011) found that the severity of the CAARMS conceptual disorganised component was the strongest predictor at the 12-month follow-up. These attenuated or subthreshold psychotic symptoms are included in UHR criteria and other research tools utilised by different research and clinical centres to identify the ARMS population (as mentioned before). This chronological description of studies detecting attenuated or subthreshold psychotic positive symptoms in ARMS young people provides a good picture of the stability of the predictive validity of UHR criteria.

In terms of **schizotypal personality characteristics**, Mason et al. (2004) found that the most reliable scale-based predictor of transition to psychosis in UHR was the degree of the presence of schizotypal personality characteristics. Again, schizotypal personality disorder, in combination with a recent decline in functioning, is included in UHR criteria (Yung et al., 2006).

With regards to **negative symptoms**, high levels have been found in PACE studies (Yung et al., 2003; 2004; 2005), with impaired concentration, reduced attention, impaired tolerance to stress, impaired energy and subjectively abnormal emotional experiences being significant predictors of the transition to psychosis. Essentially, these are CAARMS negative symptom subscales (Yung et al. 2006). Mason et al. (2004) found that marked impairment in role functioning, blunted or inappropriate affect and anhedonia/a-sociality were highly predictive in young people with an ARMS. Cannon et al. (2008), in other prospective study of 291 clinically high-risk youths, identified social impairment as a predictor of the transition to psychosis. With regards to **depression**, **anxiety** and **distress**, in the study by Yung et al. (2004), high levels of depression and anxiety were predictors of psychosis at the 12-month follow-up. The Edinburgh High Risk study also found that depression was a strong predictor in this sense (Johnstone et al., 2005).

In terms of neurocognitive variables predicting transition to psychosis, the study conducted by Brewer et al. (2005) compared 81 UHR subjects and 31 healthy controls using PACE intake criteria. In this study, 22 (27.2%) individuals converted to a schizophrenia spectrum disorder after 18 months. The major contribution of this study was the finding that deficits in olfactory identification predicted conversion to schizophrenia in UHR subjects.

These findings emphasise the importance of baseline clinical predictors of transition in UHR populations (Ruhrmann et al., 2010, Velthorst et al., 2009, Yung et al., 2003, Cannon et al., 2008). However, since psychotic disorders are characterised by a heterogeneous clinical presentation, where multiple factors are implicated in aetiology, research into a causal pathway is unrealistic. This therefore increases the need to study underlying mechanisms that might be implicated in the development of specific psychotic symptoms.

3.5. Baseline and Outcome Clinical Diagnoses

In addition to attenuated psychotic symptoms, subjects at high risk of psychosis usually present with other clinical distresses, including depression, anxiety, substance misuse, OCD, multiple comorbidity and personality disorders (Broome et al., 2005). Svirskis et al. (2005), as part of the Detection of Early Psychosis project, determined in a total of 157 subjects at high-risk of psychosis a 2.9 lifetime diagnosis of non-psychotic psychiatric disorders, with mood and anxiety conditions being the most common factors.

Lencz et al. (2004), as part of the Hillside Recognition and Prevention (RAP) program, from a total of 42 help-seeking young people with CHR+ status, found that common co-morbid diagnoses included major depression, attention deficit hyperactivity disorder, avoidant personality disorder and Cluster A personality disorder. Rosen et al. (2005) found that 48% out of a total of 29 prodromal patients experienced a wide array of comorbid psychiatric syndromes, with the two most common being major depressive disorder and cannabis dependence.

In a study by Woods et al. (2009), as part of the North American Prodrome Longitudinal Study, a total of 377 patients meeting prodromal syndrome criteria showed that at baseline 69% had one or more mood/anxiety issues, 25% had one or more substance abuse or dependence issues and 44% had one or more Axis II issues (higher prevalence of Paranoid and Schizoid personality disorder). In the study by Salokangas et al. (2012), as part of the European Prediction of Psychosis Study of 245 CHR patients, the results revealed that 71% of the mostly late-adolescent or young adult CHR patients had already experienced fully expressed psychiatric disorders, and one-third had received two or more lifetime diagnoses. Also in this study, results showed that 62% of the CHR patients had one or more current SCID-I diagnoses, and about a half in each category had been diagnosed with a lifetime depressive or anxiety-based disorder.

In a very recent systematic review, Fusar-Poli et al. (2014) found in a total of 509 young people with an ARMS that at baseline 73% had a comorbid axis I diagnosis in addition to “at-risk” signs and symptoms. About 40% of ARMS subjects had a comorbid diagnosis of depressive disorder, while anxiety disorders were less frequent (8%). At a meta-analytic level this study involved a total of 1,683 high-risk subjects, with results revealing a baseline prevalence of comorbid depressive and anxiety disorders at 41% and 15%, respectively.

For the purposes of this thesis, results from this meta-analysis also revealed that comorbid anxiety disorders were related with higher scores for disorganised speech, thus, as the authors argued, indicating that high levels of anxiety could trigger thought disorders and interfere with linguistic expression, thereby leading to higher scores on this scale. Alternatively, the experience of thought disorders and communication difficulties may be a prominent source of anxiety in ARMS subjects. Comorbid depression was related with higher anhedonia, indicating the close association between affective and negative psychopathological domains in high-risk states. As the authors argued, these symptoms may reflect core emotional dysregulation processes and delusional mood in prodromal psychosis. Moreover, anxiety and depressive symptoms are likely to impact ongoing psychopathology, global functioning and the overall longitudinal outcome of these patients (Fusar-Poli et al., 2014).

In terms of psychosis *outcome diagnoses* for those with an ARMS, who made the transition to a psychotic disorder, studies have found schizophrenia to be the commonest diagnosis, although schizoaffective disorder is also prevalent. Some examples are specified.

In a study by Yung et al. (2004), in a sample of 104 ARMS young people, 39.4% (41) of whom transited to psychosis after 28 months, 55.5% were diagnosed with schizophrenia, 25% with affective psychotic disorder, 5.5% schizoaffective disorder, 5.5% a brief psychotic episode, 5.5% psychosis not otherwise specified and 3% substance-induced psychosis. McGorry et al. (2002), in a sample of 28 young people with an ARMS, 36% (10) of whom transited to psychosis after 12 months,

found that 44% were diagnosed with schizophrenia or schizophreniform disorder, 19% major depression with psychotic features, 19% bipolar disorder with psychotic features, 6% a brief psychotic disorder, 6% psychosis not otherwise specified and 6% substance-induced psychosis.

The study by Lencz et al. (2003) (RAP programme), in a sample of 34 ARMS young people, 26.5% (9) of whom transited to psychosis after a mean of 24.7 months, found that 44.4% were diagnosed with schizophrenia, 22.2% with schizoaffective disorder, 11.1% with delusional disorder and 22.2% with psychosis not otherwise specified. Mason et al. (2004), in a sample of 74 ARMS young people, 50% (37) of whom transited to psychosis after a mean time of 26.3 months, found that 9% were diagnosed with schizophrenia, 14% with schizoaffective disorder, 9% depression with psychotic features, 3% mania with psychotic features and 3% with bipolar disorder. In the meta-analysis by Fusar-Poli et al. (2014), 73% of clinical high-risk subjects who later transited to psychosis developed a schizophrenia spectrum disorder and 11% an affective psychosis. Haroun et al. (2006) found that in 20 subjects that transited to psychosis after 12 months (13% of the total sample), 20% had no Axis I disorder, 45% were diagnosed with a mood disorder (major depression, dysthymia, bipolar disorder, or mood disorder not otherwise specified [NOS]) and 30% were diagnosed with an anxiety disorder (panic disorder, social phobia, obsessive-compulsive disorder or anxiety disorder NOS).

What is interesting to observe from these outcome labels is the prevalence of an important affective component. Since some ARMS do not develop psychosis, studies have found that those not transiting to psychosis were labelled with another disorder. In the study by Mason et al. (2004), for instance, out of 20 young people who did not transit to psychosis, 14 (70%) had received a diagnosis of depression, thereby emphasising the role of an affective component in ARMS subjects.

As Fusar-Poli et al. (2014) mentioned, these high rates of anxiety and depression comorbidity in ARMS populations may represent an artefact of both features independently influencing help-seeking behaviour and the need for care. The authors further debated that comorbidities may mediate the treatment-seeking feature

that defines the high-risk population and explains the marked impairment in psychosocial functioning that is the core feature of a high-risk state and ultimately impacts on course and outcome.

3.6. Referral Sources and Pathways to Care

Understanding referral sources and pathways to care in young people with an ARMS is an important topic to cover when considering early detection in psychosis (Boydell et al., 2013). Clinical postulations on this line of research have been grounded in associations between longer DUP and the more negative long-term outcomes found in FEP patients (Schaffner et al., 2012), while the findings indicate that early intervention services in the FEP population are to some degree successful in improving these poor outcomes. In young people with an ARMS, referral sources refer to how individuals at high risk of psychosis access their healthcare system.

Additionally, pathways to care refer to understanding the number of attempts individuals make to find help, and who are the most likely care sources to provide appropriate treatment. Studies in this field have focused especially on the help-seeking behaviour of people with an FEP. Evidence from studies of this population suggests that pathways are heterogeneous, with health professionals being the first contact point.

A retrospective study in people with psychosis found that these patients were seeking help before the first episode, and that these patients reported mood, anxiety and substance abuse symptomatology (Rietdijk et al., 2011). Addington et al. (2002) reported similar findings in a sample of 86 individuals with early signs of psychosis. The authors found that help-seeking behaviour began during the prodromal phase and continued until progression to the full-blown disorder. The most frequent contact helpers to initiate treatment pre-onset were family physicians (35.7%), and post-onset the emergency services (32.5%). The most frequent symptoms reported in the pre-onset period were depression (23.2%), functioning decline (14.4%) and delusion/paranoia (10.4%). The most frequent symptoms reported after onsets were

delusion (38%) and hallucinations (27.9%). This provides further relevance to primary care as an important source of contact for young people meeting UHR criteria. In this study, family members were the first to contact treatment services (44%), followed by the patients themselves (25%).

In the study by Addington and Addington, (2006), from a sample of 373 FEP individuals, referral sources were cited as being emergency rooms, inpatient units, family physicians, outpatient mental health units, community agencies, psychologist and/or psychiatrists' offices or family/self. In this study, DUP was shorter for inpatient units (19 weeks) and longer for referrals from psychologists/psychiatrists (39 weeks).

Studies focusing specifically on help-seeking samples of young people with an ARMS are still in short supply, but this is a growing area of research. In order to implement indicated prevention strategies in ARMS populations, there is a need to investigate the relevant pathways to care. In this regard, the EPOS Group (von Reventlow et al., 2014) conducted a large-scale study (in Finland, Germany, The Netherlands and England) with UHR individuals (N=233). The results revealed that they reported a mean of 2.9 help-seeking contacts, with an average delay between the onset of relevant problems to initial help-seeking contact of 72.6 weeks, and between initial help-seeking contact and receiving specialised high-risk care of 110.9 weeks. This resulted in a total estimated duration of unrecognised risk of psychosis of 3½ years. Across EPOS EU regions, about 90% of care pathway contacts were within professional healthcare sectors. Between EPOS regions, differences in the pathway parameters, including early detection and healthcare systems, were often very pronounced. High-risk participants who later made the transition to a fully psychotic disorder had significantly longer delays between initial help-seeking and receiving appropriate interventions.

Stowkowy, Colijn and Addington (2012) assessed 35 CHR individuals, with results demonstrating that the majority of contacts were made with general practitioners (32.8%), while the most frequent symptoms were depression (15.9%) and anxiety (11.0%). Delusion/paranoia was the most frequent symptom associated with a successful referral to contacts (14.3%). Shin et al. (2010) conducted a study

with 14 young people at UHR for psychosis. The researchers' findings indicate that the Internet and family members were the key contacts in 57% of the UHR cases, while 33% sought help by themselves. The results of this study must be considered carefully, though, due to the limited sample size.

The OASIS service (Broome et al., 2005) conducted a study with 58 ARMS individuals to assess the clinical service feasibility of care provision. Findings revealed that 29.3% were referred from primary care, 27.6% from a local first-episode psychosis service (Lambeth Early Onset Services) and 27.5% from general adult and adolescent mental health services (27.5%). Other referrers included emergency clinics (5.2%), relatives (3.4%), school counsellors (1.7%) and self-referral (5.2%). Of the 58 ARMS clients, three referred themselves or were referred by their relatives, and 13 (22.3%) had only seen one other health service professional before being referred to OASIS (10 GPs, one student counsellor, one London Maudsley Hospital-based emergency clinic and one primary care counsellor). Forty-two (72.4%) of the ARMS individuals had had more than one previous healthcare professional contact.

The results from these studies highlight the importance of intervention programmes within respective mental health and healthcare networks and public awareness in recognising, as well as the ease of gaining access to care in the early stages of psychosis, in order to reduce DUP. Evidence demonstrates that it is correct to provide clinical care for young people with an ARMS. In the present thesis, although any operationalised hypotheses and measures with regards to pathways to care will indeed be explored, our sample of help-seeking young people will be asked to mention any previous attempts made to seek help, and there will also be an effort to understand which professionals were approached.

3.7. Non-introduction of the Attenuated Psychosis Syndrome in the DSM-5

Evidence from the studies and assessment tools with Ultra-High-Risk samples provided specificity of symptoms, diagnostic accuracy and predictive value for a “psychosis risk syndrome” to be included in the DSM-5 (American Psychiatric Association, APA, 2013), as an exclusive diagnosis within the Schizophrenia spectrum and other psychotic disorders. However, APA experts considered that studies including APS were not effective for testing reliability, and there was insufficient evidence for the inclusion of this new “syndrome” in the diagnostic classification manual (APA, 2013; Regier et al., 2013; Carpenter & Tandon, 2013).

Problems include that although evidence shows individuals with a defined APS are more likely than the general population to develop a psychotic disorder in the next year (e.g. Yung et al., 2004), a significant majority of such individuals do not develop schizophrenia (false-positives) and a large proportion have current mood or anxiety symptoms (as previously evidenced in this literature review and as argued in Carpenter & Tandon, 2013). These related mood and anxiety disorders often include the presentation of attenuated psychotic symptoms that overlap into other mental health syndrome diagnoses (Fusar-Poli, 2014)

Consequently, the attenuated psychosis syndrome was added to section 3 of DSM-5 as a condition for further study. Thus, the need to continue research with ARMS populations has never been greater. However, it is necessary to conduct translation research and the validation of criteria to get closer to identifying, preventing and treating psychotic disorders (Heckers et al., 2013). It is of great importance that the target of future studies should be early symptomatology associated with the early phases of psychotic phenomena. This context is particularly important for the present thesis, which focused on potentially characterising the symptoms of help-seeking young people who present themselves with an ARMS for psychosis.

3.8. The Case of Psychotic-like Experiences and the Psychosis Continuum Model

As mentioned previously, adolescence constitutes a critical period (when the expression of psychosis proneness peaks) for the development of psychosis (Kessler et al., 2007). During this early developmental stage, subtle cognitive or perceptual abnormalities can be detected and may differentiate individuals at risk of developing the condition. At the moment, in clinical practice, psychosis constitutes a dichotomous disorder, in that either one is healthy and in no need of care or one suffers from the condition and needs treatment (as stated by Myin-Germeys et al., 2004).

Like depression (where symptoms occur on a continuum), the trajectory that leads from normality to stressful psychotic experiences in adolescence has also been suggested to occur on a continuum, with schizophrenia at one end and psychotic-like experiences (PLEs) at the other (Krabbendam et al., 2004; Yung et al., 2009; Johns & van Os et al., 2001; Myin-Germeys et al., 2004). PLEs are defined as attenuated, brief or limited psychotic experiences that appear in the form of hallucinations and delusions and in experiences resembling negative symptoms which are often not associated with distress or help-seeking behaviour (van Os., 2001; Hanssen et al., 2005). Independent from the study of at-risk mental states for psychosis, population-based studies have examined these subthreshold psychotic-like experiences.

Evidence of phenomenological and etiological continuity between PLEs and more severe psychotic states derives from these population-based studies examining the incidence, prevalence and outcome of these subclinical psychotic experiences, implicating that the same symptoms that are seen in patients with psychosis could be measured in non-clinical populations. These studies reveal that the incidence and prevalence of PLEs in the general population occur at a median rate of 3% and 5%, respectively (as systematically reviewed by van Os et al., 2009), and that this figure may be even higher among young people (Spauwen et al., 2003).

Following on from empirical evidence, two continuity models have been proposed to rationalise existing phenomenological and aetiological concerns regarding the stability of and course from PLEs to the diagnosable psychotic disorder: the quasi-experimental model and the fully dimensional model.

The quasi-experimental model, proposed by Meehl (1962) (Yung et al., 2008; Myin-Germeys et al., 2004), suggests that PLEs are variations of psychosis, with the existence of a “*schizoid taxon*” that may have different phenotypic expressions, including schizophrenia, thereby recognising discontinuity with the normal population. This model also postulates that individuals with PLEs are at increased risk of developing psychosis. Bringing together these two individual features, and in line with the stress vulnerability model (Zubin and Spring, 1977), the quasi-experimental model for the psychosis continuum proposes that if individuals who are prone to psychosis or have schizotypal features are exposed to psychosocial stress, the onset of psychosis may occur (Myin-Germeys et al., 2004).

On the other hand, the fully dimensional model assumes that psychotic symptoms are continuous with normal experiences and are not necessarily associated with disability. The model assumes that PLEs make up part of a personality along with schizotypal features (including positive psychotic symptoms and anhedonia), recognising no discontinuity with the normal population.

As argued by Yung et al. (2009) with regards to Claridge et al.’s (1996) findings, these individuals are part of a ‘healthy diversity, and these schizotypal features may actually confer advantage to some individuals, with studies reporting, for example, an association between PLEs and heightened creativity’ (Schuldborg, 2000; Nettle, 2001). Actually, Yung et al. (2009), in their study of 875 students, identified four subtypes of psychotic-like experiences, namely bizarre experiences, perceptual abnormalities, persecutory ideas and magical thinking, the first three being highly associated with distress, depression and poor functioning. The authors concluded that bizarre experiences, perceptual abnormalities and persecutory ideas may represent expressions of underlying vulnerability to psychotic disorders, while magical thinking may be a normal personality variant.

In support of the continuum paradigm, results indicate an association between PLEs and the development of psychotic disorders (review by Johns and van Os, 2001). In one of the most notable studies, Poulton et al. (2000) found that the presence of psychotic symptoms at the age of 11 years was associated with an increased risk of the occurrence of a psychotic disorder at the age of 26 years old.

Data from follow-up studies indicate that approximately 75 to 90% of developmental psychotic experiences are transitory and disappear over time. There is evidence, however, that the transitory developmental expression of psychosis (psychosis proneness) may become abnormally persistent (persistence) and subsequently clinically relevant (impairment), depending on the degree of environmental risk to which the person is additionally exposed. What is important to understand in relation to the present thesis is that although the majority of individuals experiencing PLEs are not in need of care, they are still at risk of developing psychosis, as, and in accordance with the impairment-proneness-persistence-model, the persistence of their symptoms continues to escalate to the ARMS of the psychosis spectrum.

It has been argued that transitions over the psychosis continuum may occur as a result of cognitive and emotional responses to PLEs (Krabbendam et al., 2004; Myin-Germeys et al., 2004; Spauwen et al., 2006; Cougnard et al., 2007). However, it is possible that the experience of sub-clinical psychotic experiences (such as those found in at-risk mental states) may make people more vulnerable to the development of a psychotic disorder. Patients with ARMS have been found to have negative beliefs about thoughts that may predispose individuals to anxiety, though psychosis occurs when positive beliefs about worry are also strong (Morrison et al., 2007).

Hanssen et al. (2005) examined the incidence and two-year stability of PLEs in the general population in a representative sample of 7,076 participants. The authors found an incidence rate of 2% in the sample of participants reporting incidents of psychotic experiences at the baseline (N=4042). In this study the clinical outcome of the individuals who reported PLEs was associated strongly with a family history of hallucinations and delusions, a lifetime history of using mental health

services and the interference of physical and emotional problems with normal social activities. Furthermore, clinical outcomes were associated strongly with being unemployed and single or divorced. In terms of subclinical continuity from baseline to the two-year follow-up, participants with PLEs at baseline were 65 times more likely to also present with persistent psychotic experiences. The continuity rate was 8%, with participants with an incident psychotic experience at baseline still experiencing a subclinical outcome after two years. The influence of the emotional context was additive, with participants who rated low in emotional wellbeing being more likely to present multiple psychotic experiences. Given the low rate of continuity (8%), the results of this study support a discontinuity framework of PLEs. This study also highlights the point that some individuals with PLEs may develop distress and help-seeking behaviour through dysfunctional attributions or coping styles, whereas others may not (as reported by Bentall et al., 2001; and Birchwood et al., 2000, argued and shown in Spauwen et al., 2006; Cougnard et al., 2007), thus emphasising the need for studies to consider the dynamic interactions between subclinical psychotic experiences, emotional distress and interpersonal functioning, which may influence the outcome of such psychotic experiences.

As argued by Krabbendam et al. (2004), transitions over the psychosis continuum may be driven in part by cognitive and emotional responses to psychotic-like experiences. In terms of developmental pathways over the psychosis continuum, evidence has shown that there is an association between risk factors and the developmental stage, child and adult social adversity, psychoactive drug use, male sex and migrant status (van Os, 2001).

Longitudinal studies conducted with children, adolescents and adults also indicate an association between psychotic-like experiences (PLEs) and the later development of psychoses (Chapman et al., 1994; Poulton et al., 2000; van Os et al., 2009).

Consequently, even if a person experiencing PLEs meets UHR criteria, it is highly unlikely that they will become psychotic within six to 12 months (Yung et al.,

2006), which is why the target population for early detection and intervention from a clinical staging viewpoint must be concentrated in the ARMS population.

PLEs show a similar pattern of comorbidity as it is seen in psychotic disorders (van Os et al., 2000), suggesting continuity in terms of psychopathological associations (van Os, 2008).

3.9. Risks and Benefits of being labelled in an “At-risk Mental State for Psychosis”

Labelling someone with a diagnosis involves risks and benefits. The benefits of being diagnosed with a documented illness include an individual sense of immunity and legitimisation, a *perception of having permission to be ill* (Jutel, 2009, pp. 278). The person who is ill perceives him/herself as being treated instead of being responsible for their deviation (Welsh and Brown, 2013).

A diagnosis acknowledges the social integration of the afflicted individual, with the benefit of being able to ease and clarify what makes him or her deviate from the norm (Jutel, 2009, p.279). Sociologically, a diagnosis provides a cultural manifestation of what society is prepared to accept as normal and what should be treated (Jutel, 2009, p.279).

The risks of being labelled with a medical condition are well known, and they are based on stigma from peers and self-perception. Psychosis is itself a term with socially negative connotations, and it is interpreted by the public as being synonymous with violence, suicide and poor levels of education. As argued by Moses (2009), and quoted in Welsh and Brown (2013), adolescents may be particularly vulnerable to labels which stigmatise, because they are at a stage of life when social acceptance and autonomy are key to their identity formation, and a “psychosis” label may interfere with these processes. There is also a risk that the illness role becomes a major marker of a young person’s identity and threatens the sense of normality, reduces self-esteem, increases depression and demoralisation and results in poor treatment adherence and reduced social contact, thus making a relapse more likely (Yang et al. 2010, quoted in Welsh and Brown, 2013).

In terms of benefits, a preventive approach to psychosis potentially makes a positive change to public awareness surrounding the treatability of the “syndrome,” thereby diminishing stigma. The potential benefits of identifying those at risk is that it might inhibit self-stigmatisation by improving self-empowerment and by preventing symptoms that might lead to stigmatisation and discrimination by others (O’Connor, 2013). In a recent study, Welsh and Brown (2013) interviewed six adolescents with an identified ARMS. In this study, the authors identified three essential themes with relation to the “label.” These involved, ‘It is better to say it’, ‘How others would take me’ and ‘Just to have somebody to talk to’. These themes suggest that participants recognised risk identification *‘as a means of personally justifying and explaining their current symptoms, as well as providing a sense of optimism that their condition was not yet fully formed. Concerns regarding stigmatisation were identified although rarely experienced’* (Welsh and Brown, 2013).

Thus, in order to enable early interventions in young people with an ARMS, the social construct of stigma needs to be taken into consideration further, as it may undermine the wellbeing of young people at risk of psychosis, irrespective of clinical symptoms (Yang et al., 2010). Recently, Rüsch et al. (2014a) measured self-labelling, stigma variables and wellbeing at baseline and after 12 months in 77 at-risk young people. Results from this study revealed that an increase in self-labelling during the at-risk phase was a predictor of stress at the 12 months follow-up. However, a decrease in stigma-related stress predicted better wellbeing at follow-up, after controlling for symptoms, psychiatric comorbidity and socio-demographic variables. In this regard, the authors suggest that early intervention services for at-risk patients should consider including strategies to reduce the stigma associated with the at-risk status and to support young people to cope better with self-labelling and stigma-related stress.

Actually, a post-hoc analysis, recently conducted by the same authors (Rüsch et al., 2014b), confirmed these cross-sectional results while employing a stress-coping model of mental illness stigma, in order to identify stigma mechanisms as

targets for future interventions. Results from this analysis revealed that changes in self-labelling and stigma-related stress after one year influenced the wellbeing of young people at risk of psychosis, independent of baseline levels.

However, since labelling young people as “mentally ill” is an inevitable consequence of engagement with clinical services, researchers suggest that self-labelling and stigma-related stress should be taken into account in early intervention programmes, for example via modified labelling theory (Link et al., 1989). Moreover, and consistent with the present thesis, since interventions targeting coping strategies have been found to diminish the impact of stigma in young people after hospitalisation (Moses, 2014), a stress-coping model for mental illness stigma is also encouraged (Rüsch et al., 2009).

Chapter III: Early Intervention in ARMS

Intervention outcomes provided by research studies with FEP populations, and improvements in the early detection of individuals in an at-risk mental state for psychosis, have sparked interest in widening the spectrum of early intervention to ARMS populations. In the line of indicated prevention, treatments for individuals at risk aim at targeting current symptoms and delaying and/or preventing transition to psychosis. In this context, there is now strong evidence derived from RCTs and open-label trials that the early intervention paradigm is effective prior to the onset of a first episode of psychosis, i.e. during the at-risk mental state phase (McGorry et al., 2002; McGorry et al., 2008; Morrison et al., 2002, Morrison et al., 2004; Morrison et al., 2007; McGlashan et al., 2007; NICE, 2002; Marshall and Rathbone, 2011).

Based on evidence citing disturbed brain maturation in ARMS populations, early intervention treatment studies conducted to date have focused on neuroprotective agents such as atypical antipsychotics (Ruhrmann et al., 2007), antidepressants (Cornblatt et al., 2007), low-dose lithium (Berger et al., 2007) and Omega-3 fatty acids (Amminger et al., 2010). Taken together, these composites have been quite promising in the field of early intervention in ARMS populations, as they can actively protect potential declines in brain maturation and also limit progression when psychosis is in evidence.

In the specific case of the effectiveness of Omega-3 fatty acids (ω -3 PUFAs') vs. a placebo, found in the study by Amminger et al. (2010), a recent post-hoc analysis conducted by Mossaheb et al. (2013) examined how long the effects of these agents last, and the found that compared to the placebo, Omega-3 fatty acids reduced general and total PANSS scores after four weeks of treatment, were responsible for a reduction in positive symptomatology after eight weeks and reduced negative symptoms after 12 weeks. Moreover, the researchers found that the delay to the onset of Omega-3 fatty acids was comparable to the delay found in the use of antipsychotics and antidepressants.

Three randomised controlled trials in young people with an at-risk mental state for psychosis were pivotal in sourcing evidence supporting the effectiveness of the early intervention paradigm in the ARMS population: the randomised controlled trial conducted by McGorry et al. (2002), at the PACE clinic in Melbourne, was the first to study the impact of early intervention in high-risk patients via a randomised non-blind controlled trial that compared a combination of low dose risperidone plus cognitive-behavioural therapy (n=31) versus needs-based intervention alone (n=28). In the group offered specific intervention there was a significantly higher rate of transition to psychosis than in the needs-based intervention group at the end of the six-month treatment phase, although this difference was not significant after 12 months. This result suggests a delay in the onset of psychosis in the group under specific intervention.

The second RCT, conducted by the Early Detection and Intervention Evaluation Group in Manchester (EDIE trial) (Morrison et al., 2004), compared cognitive therapy with treatment as usual (TAU) in 58 patients at ultra-high-risk of developing a first episode of psychosis. Intervention was offered over six months, with monitoring on a monthly basis for 12 months. The results demonstrated that cognitive therapy significantly reduced the likelihood of transition to psychosis after 12 months, as well as the likelihood of being prescribed anti-psychotics and of meeting criteria for a psychotic disorder.

The third study was a longitudinal double-blind trial conducted by the PRIME group (McGlashan et al., 2006, initiated in 1999) (T. McGlashan from Yale University, J. Addington from University of Calgary, R. Zipursky from University of Toronto and D. Perkins from University of North Carolina). The PRIME study compared the effectiveness of treatment with low-dose olanzapine or a placebo for 12 months in a group of 60 UHR help-seeking patients, with 12-month follow-ups, using the SIPS (Miller et al., 2002). The results suggested that although the group offered low-dose olanzapine had a reduced rate of transition to psychosis, this result was not statistically significant, and there were some adverse effects associated with

the use of olanzapine, such as weight gain, leading to a moderate interpretation of the results (McGlashan et al., 2006).

Summarising, transition rates at 12 months were highest for the double-blind trial (27%) and lowest for the psychological treatment trial (15%). The critical component for these trials is related to the fact that case-finding strategies differed across the three trials. The PACE trial used the CAARMS, the EDIE trial used the positive and negative syndrome scale and the PRIME trial used the structural interview for prodromal syndromes. Although all intervention trials reported a reduction in the likelihood of transition to psychosis, they had follow-up periods of only six or 12 months after cessation (Addington et al., 2006, p.2).

Nonetheless, although preliminary and accompanied by methodological restrictions (small sample sizes and different measures for the ultra-high-risk criteria and short follow-up periods), the results of these initial trials revealed the effectiveness of psychological and psychopharmacological interventions in patients with a defined ultra-high-risk status. Moreover, these studies revealed positive outcomes in the ability to treat the difficulties associated with symptoms and functioning, and in delaying or preventing the onset to a first-episode psychosis (Addington and Addington, 2001; McGorry et al., 2002; Craig et al., 2004; Garety et al., 2006; Morrison et al., 2002; Morrison et al., 2004; Morrison et al., 2007; Killackey and Yung, 2007; Klosterkotter et al., 2005; Philips et al., 2007).

In terms of psychological therapies, studies on psycho education and family therapy have shown an improvement in symptomatology, functioning and quality of life in young people with an ARMS (O'Brien et al., 2007; Hauser et al., 2009; McGlashan et al., 2007). Furthermore, stress management and supportive interpersonal therapy are now routinely offered in early intervention services for AMRS subjects (McGlashan et al., 2007).

A recent PRISMA systematic review, conducted by Okuzawa et al. (2014), included six studies (comprising 800 UHR participants) and found that all trials employed cognitive behaviour therapy for the treatment of individuals with an at-risk

mental state for psychosis. In this review the authors found that cognitive behaviour therapy may provide the benefits of delaying or preventing the onset of psychosis in clinical high-risk individuals, although effect sizes in the trials to date are small.

In the UK, psychological therapies are being offered in combination with low-dose medication. Results from the Outreach and Support in South London (OASIS), revealed that in a population of 258 ARMS individuals, 33% were treated with cognitive behavioural therapy (CBT) only, 17% with antipsychotics (APs) in addition to CBT sessions, 17% of subjects with antidepressants (ADs) in addition to CBT and 20% with a combination of interventions (Fusar-Poli et al., 2014b).

A recent meta-analysis, conducted by van der Gaag et al. (2013), aimed at demonstrating the effectiveness of the early detection of people at risk of developing psychosis and the interventions employed to prevent or delay a first episode of psychosis. The authors identified 10 longitudinal studies with 12-month follow-up data on the transition to psychosis and five studies with follow-ups varying from 24 to 48 months. The identified studies assessed the clinical high-risk of psychosis, by using the two most acceptable sets of criteria: UHR criteria, as defined by the CAARMS, and basic symptoms criteria, in a total population of 1,112 high-risk patients. The early intervention procedures included anti-psychotic medication, CBT, Omega-3 fatty acids and integrated psychological therapies.

Results from this meta-analysis suggest that preventive interventions in this particular cohort are effective with CBT and anti-psychotic medication. Furthermore, it indicates that further studies with Omega-3 fatty acids and integrated psychological interventions are required, although these are important pathways for mental health workers to consider. In this meta-analysis, the results revealed that the risk of onset is reduced as a result of early intervention by 54% to 52% after 12 months, and by 37% to 35% between two and four years. The authors debated that although preventive effects are reduced over time, they are still successful in reducing the risk of developing a first episode of psychosis, which implies that interventions do not protect entirely against psychosis. Yet, early intervention is still justifiable, because this at-risk population finds it hard to function socially and experiences high distress

levels and high psychopathological comorbidity, especially anxiety and/or depression (as argued by Yung et al., 2004).

Moreover, this group of young people, who do not move on to psychosis, are not healthy “false-positive” but are a help-seeking population, psychosis-prone and suffering from the abovementioned mental and social deficits (van der Gaag et al., 2013).

The same trend of findings was reported in two meta-analysis (Stafford et al., 2010; Hutton and Taylor, 2013).

The meta-analysis conducted Stanfford et al. (2010), aimed to determine whether any psychological, pharmacological or nutritional intervention could prevent or delay transition to psychosis in people at UHR. Of the total 11 trials, comprising 1246 participants, the results revealed a moderate effect of CBT on reducing transition to psychosis at 12 months. The results also showed that there was low evidence for omega-3 fatty acids as well as for integrated psychotherapy, but these interventions were associated with a reduction in transition to psychosis at 12 months.

The meta-analysis conducted by Hutton and Taylor (2013) aimed to examine the evidence of effectiveness of CBT-informed treatment for preventing psychosis in people who were not taking anti-psychotic medication, compared to usual or non-specific control treatment. Results from the six completed trials included in the meta-analysis, revealed that there was an association between CBT-informed treatment and a reduced risk of transition to psychosis at 6, 12 and 18-24 months, as well as reduced symptoms at 12 months.

This trend of findings in terms of the effectiveness of treatments reducing the likelihood of psychosis denotes that further studies should focus not only on transition outcomes, but also should be expanded through the clinical staging paradigm, requiring a broader set of outcome measures (McGorry & Van Os, 2013 cited in van der Gaag et al., 2013).

The International Early Psychosis Association Writing group (2005) have been made significant efforts; however, to date, there are no official guidelines for the treatment of ARMS individuals. Nonetheless, from the literature it seems that the first option for individuals with an ARMS involves psychological therapies or Omega-3 fatty acids, with drug treatment being offered as a second option in those individuals with severe symptomology and significant function decline.

Treating ARMS subjects within real-world clinical settings creates practical problems that can significantly impact on the effect of early interventions. In this regard, several research groups are supporting a novel approach to early intervention in ARMS, based on the clinical staging model (Scott et al., 2013; van der Gaag et al., 2013; Fusar-Poli et al., 2014b).

4.1. How should Early Intervention be applied to the ARMS population?

As mentioned previously, there is continuing debate about the utility of the ARMS as a possible diagnostic class within psychotic syndromes. With the publication of the new DSM-5 (APA, 2013), and the subsequent inclusion of “attenuated psychosis syndrome” (corresponding to an ARMS) in the conditions for further study, research trends have shifted from an exclusive focus on transition rates to ascertaining the need to explain underlying non-linear symptomatology and various outcomes of clinical high-risk.

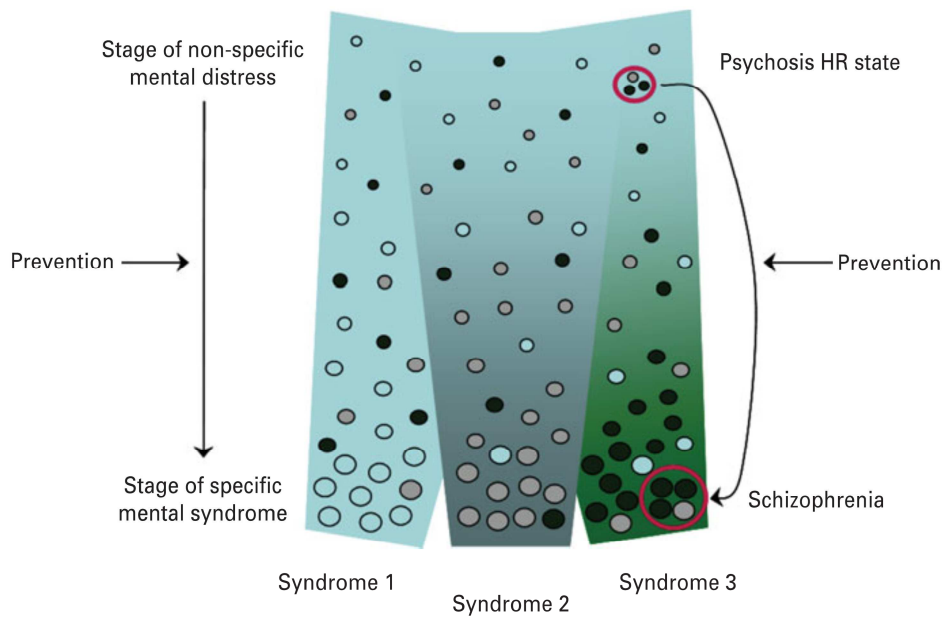
In a recent critical review, Fusar-Poli et al. (2014) examined the epidemiological validity and efficacy of high-risk criteria, in order to determine which model would be better employed in early intervention. The authors concluded that current early intervention models need refining to bring together population-based findings of high-levels of PLEs and clinical expressions of risk. Furthermore, the authors proposed that the combination of early non-specific symptoms (subthreshold levels of psychotic symptoms, depression and/or anxiety) with distress in help-seeking populations might target a stepwise early care focus on the broad patterns of early mental distress.

Having been previously described the *locus* of ARMS patients within the psychosis continuum (van Os. et al., 2004), and the evidence of a shift of research attention from transition studies to an ongoing elucidation of risk factors (van der Gaag et al., 2013), it is important to define how early intervention should be best applied to ARMS patients within a clinical staging diagnostic system (McGorry et al., 2009; 2010; Fusar-Poli et al., 2012, 2014, supported in the review of Scott et al., 2013).

4.2. Clinical Staging Model in Early Psychosis

The clinical staging model in early psychosis limits the degree of the development of a disorder in an individual at a particular stage (a point in time). This model guides the clinician through the different symptomatology that occur in the different stages of the psychosis continuum, from early non-specific symptomatology to florid psychotic disorder, and it then helps to select the best treatment option (McGorry et al., 2009; 2010). The assumptions behind this early intervention model are supported by evidence relating to better treatment responses, prognoses and the effectiveness of interventions during the early stages of the illness (e.g. van der Gaag et al., 2013). The clinical staging model for early psychosis was proposed by McGorry et al. (2006) and illustrated by Fusar-Poli et al. (2014) as below:

Figure 2: Clinical Staging Model and its application to early psychosis (McGorry et al., 2006, illustrated by Fusar-Poli et al., 2014)



According to the Figure 2, the prodromal prevention staging model postulates that mental health disorders develop from non-specific symptoms that increasingly progress into syndromes relating to, for example, anxiety (syndrome 1), depression (syndrome 2) and psychotic disorders (syndrome 3). As Fusar-Poli et al. consider, the *‘treatment of early mental distress may efficiently prevent transition to mental health disorder in general (left). Comparatively, the exclusive focus on high-risk state and prevention of schizophrenia (right) benefits a much narrower population’* (Fusar-Poli et al., 2014).

Bearing in mind the heterogeneous outcome of psychosis, moderation to specific targets may be achieved if early intervention is offered at different stages of the disorder’s development. This model assumes that for each clinical stage within the psychosis continuum framework, there is a target population for recruitment, a potential intervention and it also incorporates indicative biological and endophenotypic markers. It has four-stages (from 0 to 4), assuming a non-stable approach, i.e. the progression of an individual’s psychotic symptomatology from

stage 1 to stage 2 could be prevented through specific intervention tailored to the stage (McGorry et al., 2009). The four-stage model is present below in Table 1.

Table 2: Clinical Staging Model Framework (adapted from McGorry et al., 2006, illustrated in McGorry et al., 2009)

Clinical Stage	Definition	Target populations for recruitment	Potential interventions	Indicative biological and endophenotypic markers
0	Increased risk of psychotic disorder: no symptoms currently	First-degree teenage relatives of probands	Improve mental health literacy, family education, drug education, brief cognitive skills training	Trait marker candidates and endophenotypes, e.g. smooth pursuit eye movements, P50, niacin sensitivity, binocular rivalry, pre-pulse inhibition, mismatch negativity, olfactory deficits.
1a	Mild or non-specific symptoms, including neurocognitive deficits, of psychotic disorder; mild functional change or decline	Screening of teenage populations; referral by primary care physicians or school counsellors	Formal mental health literacy, family psycho-education, formal CBT, active substance-abuse reduction	Trait and state candidates where feasible according to sample size
1b	Ultra-high-risk: moderate but subthreshold symptoms, with moderate neurocognitive changes and functional decline to “caseness” (GAF<70)	Referral by education agencies, primary care physicians, emergency departments, welfare agencies	Family psycho-education, formal CBT, active substance-abuse reduction, low-dose atypical antipsychotic agents for episodes, antidepressant agents or mood stabilisers for comorbid mood conditions	Niacin sensitivity, folate status, brain changes (magnetic resonance imaging and spectroscopy), hypothalamus-pituitary-adrenal axis dysregulation)
2	First episode of psychotic disorder: full threshold disorder with moderate-severe symptoms, neurocognitive deficits and functional decline (GAF 30-50)	Referral by primary care physicians, emergency departments, welfare agencies, specialist care agencies, drug and alcohol services	Family psycho-education, formal CBT, active substance-abuse reduction, atypical antipsychotic agents for episode, antidepressant agents or mood stabilizers, vocational rehabilitation	Continue with markers of illness state, trait and progression

3a	Incomplete remission from first episode of care (could be linked or fast-tracked to stage 4)	Primary and specialist care services	As for “2” with additional emphasis on medical and psychosocial strategies to achieve full remission	Continue with markers of illness state, trait and progression
3b	Recurrence or relapse of psychotic disorder, which stabilizes with treatment at a level of GAF, residual symptoms, or neurocognition below the best level achieved following remission from first episode	Primary and specialist care services	As for “3a” with additional emphasis on relapse-prevention and “early warning signs” strategies	Continue with markers of illness state, trait and progression
3c	Multiple relapses, provided worsening in clinical extent and impact of illness is objectively present	Specialist care services	As for “3b” with emphasis on long-term stabilization	Continue with markers of illness state, trait and progression
4	Severe, persistent OR unremitting illness as judged on symptoms, neurocognition and disability criteria	Specialist care services	As for “3c” but with emphasis on clozapine, other tertiary treatments, social participations despite ongoing disability	Continue with markers of illness state, trait and progression

The clinical staging model for early intervention seems adequate for the present thesis, as it provides a link between psychopathological comorbidity and neurodevelopmental circumstances within the critical periods of adolescence and early adulthood (peak of incidence of psychotic disorders) (Fusar-Poli, 2014).

Furthermore, it incorporates the notions of emotional and cognitive disturbances that may occur in this period of the life, and it opens up the possibility of targeting interventions for this particular population, in specific stages of the illness progression. In the case of the ARMS (1b) (*per* example and pertinent to this thesis), the staging model has the potential to provide a heuristic framework for organising research evidence, as it acknowledges that persistent subthreshold psychotic symptoms, comorbid psychopathology and/or early psychosocial decline – taking into account the levels of severity, intensity, coherence, persistence and duration – represent an individual at UHR for psychosis.

Additionally, it opens up the possibility for research into potential protective mechanisms at each stage of the psychosis continuum (e.g. coping, shorter DUP, low expressed emotion) and into the potential role of a combination of factors (e.g. gene-environment interactions) (McGorry et al., 2009). Moreover, it acknowledges the ARMS (1b) as a clinical target group in need of intervention, as the symptom specificity in this population is more prominent than in highly non-specific stages of the continuum (PLEs). Furthermore, it highlights the clinical significance of help-seeking behaviour, and the importance of intervention in individuals experiencing psychotic symptoms and a decline in functioning.

The problems with regard to this model relate to the heterogeneous nature of outcomes (i.e. not all people experiencing psychotic symptoms will progress at set symptom stages and at the same time) and in linking the progression of symptoms to the specific stage of intervention. That is why studies on risk markers in specific stages of the psychosis continuum are necessary, in order to improve the predictive ability of the specific symptoms that characterise a certain stage and to continue bridging these symptoms in relation to the appropriate stage-related intervention. The

clinical staging approach in ARMS is also supported in the abovementioned systematic review by van der Gaag et al. (2013).

4.3. Conclusions drawn from Chapter III

The evidence provided herein clarifies that young people at high risk of psychosis experience early indicators that are fundamental to early detection and early intervention. However, and although many efforts are being made by different research teams in order to devise precise identification and intervention markers for those individuals at-risk-mental state for psychosis (Yung et al., 2005, 2008, for example), researchers agree that more studies on the high-risk phase of psychosis are necessary, especially those that aim at determining the complex role of pre-existing psychopathology and the psychological processes that lead to the development of psychotic symptoms, thus enabling a precise and symptom-stage focus on early intervention.

Additionally, it is necessary to understand how these psychological processes can operate as protective mechanisms that may attenuate the progression to severe psychotic symptomatology that meets the clinical picture of a full-blown disorder. By investigating the intersection of intrinsic psychological mechanisms that increase the risk of developing a psychotic disorder, early intervention protocols may be more effective in decelerating the progression of the syndrome.

Chapter IV: Environmental Risk Factors

Psychotic disorders in adolescence have widespread effects on functioning and are often associated with premorbid vulnerability (Boeing et al., 2007). It is now agreed between researchers that vulnerability to psychosis in adolescence provides a link between biological factors (heritability, altered neurohormonal processes), social/behavioural factors (problems with social competency, social withdrawal, school problems), cognitive factors (premorbid speech and language impairments, deficits in information and attentional processes) and affective disorders (abnormal emotional contact, emotional instability) (Ingram and Price, 2010).

Current evidence on the premorbid indicators of vulnerability in relation to psychosis remains in agreement on results that make clear that genetic risk, neurobiological, neurodevelopmental, neurocognitive deficits and environmental factors are all involved in the aetiology of psychosis (Cannon et al. 2008; Smith and Cornblatt, 2005; Hawkins et al., 2008; Kola et al., 2010; Myles-Worsley et al., 2007; Mayoral et al., 2008; Gonzalez-Pinto et al., 2010; Sullivan et al., 2003; Harrison & Weinberger, 2005).

Since explaining all the body of evidence regarding genetic risk, neurobiological, neurodevelopmental, neurocognitive deficits in psychosis is beyond the scope of the present thesis, this chapter aims at providing a brief description of the environmental risk factors that are currently supported in the psychosis literature.

5.1. Environmental Risk Factors

Socio-demographic characteristics that have been associated with the risk of developing psychosis are: male gender, younger age, low level of education, being homeless, living alone and being unemployed (Amminger et al., 2006; Schultze-Lutter et al., 2008, Ruhrmann et al., 2010; Harrison et al., 2001; Salokangas et al., 2009). Castro-Fornieles et al. (2007), in a longitudinal study comparing first-episode young people against typical controls, found that the first-episode individuals had a lower socio-economic status and fewer years of education. In this study, the majority of first-episode individuals were males. Fusar-Poli et al. (2010) prospectively

compared psychosocial functioning between a sample of at-risk psychosis subjects and a demographically matched general population. In this study, at-risk mental state subjects were more likely to be unemployed, living in communal establishments or alone. These variables at baseline were associated with an increased risk of developing psychosis within the following year. Other factors that have been associated with a heightened risk of psychosis are lower socio-economic status, disadvantage, discrimination, parental separation and urban environment, cannabis use and childhood trauma (Karlsen et al. 2005; Veling et al. 2007; Morgan et al. 2008; Berg et al., 2015).

5.1.1. Urban Environment, Ethnic Minorities and Cannabis use

It has been suggested that growing up in an *urban environment* is a risk factor for the development of psychosis, as it causes the abnormal persistence of a developmental expression of psychotic symptoms (Pedersen & Mortensen, 2001). It is likely that pre-existing vulnerability makes individuals more sensitive to risk, thus increasing the effect of the urban factor (van Os, 2003, 2004). Actually, evidence from a study conducted by Spauwen et al. (2006) compared urbanicity to non-urbanicity in a sample of 918 adolescents (aged 14-17 years) with pre-existing psychotic experiences, as measured by the SCL-90-R subscales of psychoticism and paranoia (Degoratis & Cleary, 1977), and they found that the risk-increasing effect of urbanicity on the occurrence of psychotic symptoms was only apparent in those with previous psychotic experiences. Thus, as the authors indicate, the outcome of the developmental expression of psychosis is worse in an urban environment.

In terms of *ethnic minorities*, studies have found consistency for the association between psychotic syndrome risk and minority group position. In a meta-analysis, Cantor-Graae & Selten (2005) found that in incidence studies in migrants, the mean weighted relative risk (RR) was 2.9, and the risk of psychosis was higher in migrants from areas where the majority of the population was Black. In this study the

broad spectrum of the countries of origin, and the increased risks for first- and second-generation migrants, suggests that a single genetic or biological factor cannot explain these findings, with the authors indicating a further role for psychosocial adversity in the increased risk of psychosis. Thus, and according to van Os, Kenis & Rutten (2010), evidence has shown that the effect of belonging to a minority ethnic group on psychotic syndrome depends on the ethnic density in the area in which the person is living (Veling et al., 2008), thereby suggesting that it is not ethnic group that increases risk but rather the degree to which one occupies a minority position, or stands out, in relation to the wider social environment, further indicating that social maladjustment may play a mediating effect between the urban environment and psychosis risk.

In terms of an association between *cannabis use* and the increased risk of psychosis, the body of evidence is vast and would require a comprehensive approach, which is beyond the scope of the present thesis. The most comprehensive review on this topic so far, however, was conducted by Radhakrishnan et al. (2014) and is worth reading.

Succinctly, delta-9-tetrahydrocannabinol, the main psychotropic component of cannabis, triggers a full range of transient psychotic symptoms, cognitive deficits and psychophysiological abnormalities resembling some of those relating to schizophrenia features. In individuals with a psychotic disorder, cannabis can exacerbate symptoms, trigger relapse and have negative consequences on the course of the illness (van Os, Kenis & Rutten, 2010; Radhakrishnan et al., 2014). Studies in individuals at genetic risk of psychotic syndrome have found that the substance causes an amplified psychotic response (D'Souza et al., 2005), while results from meta-analyses reveal that there is an association between the use of cannabis and psychosis, even after adjusting for confounders. In a systematic review, Moore et al. (2007) found that any cannabis use was associated with a 40% increased risk of a psychotic disorder, and the risk increased in a dose-dependent fashion in line with greater cannabis exposure.

A recent study of 1,049 students presenting to primary care in Ireland found that frequent cannabis use was associated independently with the greater intensity of positive, negative and depressive psychotic symptoms, supporting the fact that cannabis use increases the risk of developing psychotic symptoms (Skinner et al., 2010). Peters et al. (2009) found in 17 help-seeking, ultra-high-risk and 52 recent-onset patients with psychosis that 37% of the subjects reported that their first psychotic symptoms appeared during cannabis intoxication, and they reported feeling more anxiety, depression and suspiciousness immediately after cannabis use than cannabis-using controls, thus suggesting that schizophrenia patients in the prodromal phase and subjects at UHR for psychosis are more sensitive to some negative effects of cannabis, in particular psychotic effects, compared to cannabis users in the general population.

In a recent prospective study, Valmaggia et al. (2014) found in 182 young UHR people that although 134 individuals reported lifetime cannabis use, most of them had stopped using cannabis before clinical presentation ($n = 98$), mostly due to its adverse effects. In these cases, frequent use, early-onset use and continued use after presentation were associated with an increase in transition to psychosis. However, results showed that lifetime cannabis use is common in young UHR people but not a predictor of conversion to psychosis.

Thus, although the associations between cannabis use and psychosis have gained increasing recognition, studies have failed to find that cannabis use predicts the onset of psychosis, and there is also a lack of research on the moderator and mediator effects of this association. Emerging evidence suggests the crucial role of the age of exposure to cannabis (with the period of adolescence being identified as a period of heightened risk), familial risk, degree of schizotypy, childhood trauma and the role of genetic factors in moderating this association. In a recent review, Radhakrishnan et al. (2014) argued that cannabis impacts on public health include high conversion rates from cannabis-induced psychosis to schizophrenia, global and specific domains of cognitive impairment resulting from cannabis use, the effects of acute intoxication, the precipitation of psychotic disorders in genetically vulnerable

populations, including individuals with a history of childhood abuse or family history of psychotic disorders, and the increased risk of negative effects of cannabis use in prolonged and early exposure.

5.1.2. Trauma and family functioning

Ethnic minority status and childhood trauma are established risk factors for psychotic disorders. Both have been found to be associated with increased levels of positive symptoms, in particular auditory hallucinations. In a recent study, Berg et al. (2015) compared the prevalence of *childhood trauma* (physical abuse/neglect and sexual abuse) for a total of 454 patients diagnosed with a non-affective or an affective psychotic disorder from different ethnic backgrounds. The results revealed childhood trauma was reported in 69% of patients from ethnic minorities. These patients had more current hallucinatory behaviour and lifetime symptoms of hearing two or more voices conversing. Using regression analyses, the researchers found that the presence of childhood trauma mediated the association between ethnic minorities and hallucinations.

There is evidence of some association between experiences of early trauma and the later development of psychosis (Read & Ross, 2003; Spauwen et al., 2006; Morrison et al., 2003; Varese et al. 2012), with reporting rates of childhood sexual abuse in patients with psychosis at 42% for women and 28% for men, and childhood physical abuse 35% for women and 38% for men (Morgan & Fisher, 2007). A recent meta-analysis (Varese et al. 2012) found that patients with psychosis were 2.72 times more likely to have been exposed to childhood adversity than their control counterparts (95% CI 5 1.90–3.88), with researchers concluding that estimated population attributable risk was 33% (16%–47%). However, evidence supporting a direct association between trauma and psychosis is not consistent, as not all studies have found this association, and most lack either statistical power or attention to potential moderating or mediating variables (Bendall et al., 2008), with researchers

further suggesting that other factors mediate this association (van Os, Kenis & Rutten, 2010). In terms of specific symptoms, studies have found an association between childhood abuse and positive symptoms in patients with psychosis (Ramsay et al. 2011), specifically the association between sexual and emotional trauma and auditory verbal hallucinations (Bentall et al. 2012).

In terms of an association between childhood trauma and the prevalence of attenuated psychotic symptoms in young people with an ARMS, Thompson et al. (2009), in a population of 30 young people at high risk of psychosis, found that 97% of the young people reported at least one general traumatic experience. From these, 83% reported physical abuse, 67% emotional abuse and 27% sexual abuse. In this study, trauma exposure was related with the severity of attenuated positive symptoms, particularly grandiosity, specifically in participants from ethnic minority groups. The same trend was found by Wigman et al. (2011), who found a higher exposure to childhood trauma amongst ethnic minorities with prodromal symptoms of psychosis.

In terms of *family functioning*, evidence indicates that in young ARMS people, family functioning impairments are associated with psychotic symptoms, exacerbation and reduced social functioning (O'Brien, 2006). The preposition in the current thesis is that trauma and dysfunctional family and social environments act as stressor/triggering events that disrupt cognitive functionality.

Cognitive models for psychosis (Garety et al., 2001) explain this mechanism further (explored in the next chapters). As mentioned, considering that psychosis has a multifactorial aetiology, it is likely that the effect of trauma interacts with many other factors (Bendall et al., 2008; van Os, Kenis & Rutten, 2010).

Actually, exposure to early trauma has been found to predispose individuals to more emotional distress associated with psychotic experiences and less perceived control over these experiences, compared with those without a traumatic history (Bak et al., 2005). The authors found less effective coping resources in the face of delusional or hallucinatory experiences, suggesting that early trauma is not purely the

effect of the severity of psychotic experiences.

Thus, trauma histories in subjects with psychotic experiences, or people diagnosed with schizophrenia, suggest a negative impact on coping resources that contributes to psychotic symptom formation (Bak et al., 2005). Specifically, how an individual experiences psychological stress, and the subsequent coping response, is an underlying process that may influence the onset of psychotic symptoms.

To obtain further insight about the role of maladaptive coping in the stress-vulnerability diathesis in psychosis, an investigation into coping patterns in the at-risk mental state phase is important. As mentioned previously, and for the purpose of this thesis, exposure to early trauma may increase the risk of dysfunctional responses or maladaptive coping strategies to early anomalous experiences, resulting in psychotic symptom formation (Bak et al., 2005; Jackson et al. 2002; Garety et al., 2001). Further considerations on this topic will be presented in the next chapters.

Chapter V: Interpersonal Relationships, Stressful Life Events, Coping and Social Support as Risk Factors for Psychosis

This chapter provides a theoretical and an empirical integration of the concepts of stress, coping and social support from a developmental perspective and determines how these factors may affect and effect the development of psychotic symptomatology, taking into account late adolescence and early adulthood.

6.1. Stressful Life events, Coping, Social Support and the Development of Psychotic Symptoms

During adolescence and early adulthood, individuals experience changes in family and peer relationships. This period of development carries with it varying amounts of stress¹ which have effects on later adjustment, with research showing that stressful life events (such as, parenting divorce, moving home, change of school, death of a relative) occurring at this stage may contribute to emotional problems that disturb constructive development, placing the individual at risk of psychopathology (extensively reviewed in Thoits, 1995; Compas et al., 1986; 1989) and, for the purpose of this thesis, at risk of developing psychosis (e.g. Norman and Malla, 1993).

In the case of the occurrence of psychotic symptoms as a life-event in adolescence and young adulthood, one could hypothesise that it disrupts needs, goals and roles at a time when a developing sense of self or identity is at a critical juncture (Erikson, 1968; Jackson & Birchwood, 1996).

However, even though stress is normally conceptualised as the occurrence of external processes, another two sets of factors suggest the role for internal dynamics in the incidence of stress. Firstly, although stressful events may simply occur to people, other events are the result of an individual's own actions. For example, a

¹ "Stress" or "stressor" refers to any environmental, social or internal demand which requires the individual to readjust his/her usual behaviour patterns (Holmes and Rahe, 1967, cited in Thoits, 1995)

person with dysfunctional interpersonal patterns in relationships may cause turbulent relationships with acquaintances, co-workers and romantic partners that result in stress. Secondly, there is the influence of appraisal processes on what is perceived to be stressful, i.e. each individual evaluates differently the impact of a stressful event, placing one individual at increased susceptibility to emotional stress and to the development of psychopathology (Ingram and Luxton, 2005).

Evidence shows that stressful life events set in motion a self-perpetuating cycle in which stress and symptomatology contribute to and exacerbate one another (Norman and Malla, 1993), with coping playing an important function in this cycle (Seiffge-Krenke, 2000). Regarding the role of coping strategies in regulating stress, and in accordance to Lazarus and Folkman (1984), some individuals use adaptive problem-focused coping strategies to reduce stress, while others use dysfunctional coping strategies that aggravate the effects of stress, thus causing emotional and behavioural problems.

In order to understand the impact of major and daily events in the psychosocial stress process, and the possible contribution of avoidant coping (dysfunctional strategy) in exacerbating the maladaptive effects of these stressors, Seiffge-Krenke (2000) conducted a longitudinal study over three years with 94 adolescents and their mothers. Using path analysis, results from this study suggest that stressful life events are strongly related over time with symptomatology, with avoidant coping acting as a significant predictor of adolescent depressive symptomatology. Additionally, in this study, emotional and behavioural problems led to a time-lagged increase in avoidance, thereby creating a vicious circle.

These mediational effects back up previous findings, particularly emphasised in the study by Compas et al. (1986a), where stressful life events occurring in a sample of 243 adolescents were related strongly to clinical symptomatology (anxiety and obsessive-compulsive symptoms). Moreover, reconsidering Compas et al.'s (1993) arguments with regards to an association between stress, coping and depressive symptoms, they are supported in transactional models which view stress as a consequence of environmental events and circumstances as they are cognitively appraised and/or perceived by the individual (Lazarus and Folkman, 1984).

The role of social support in adapting to stressful life events and psychological distress during adolescence is relevant for research. Furthermore, it is essential to substantiate the theoretical nature of the association between the concepts of coping and social support.

Reviewing the study by Compas et al. (1986), stressful life events and low social support were found to relate to more clinical symptomatology, while perceived social support was correlated negatively with depression, somatisation and interpersonal sensitivity. Furthermore, in a six-month longitudinal study, Compas et al. (1986b), in a sample 64 adolescents, exploring the role of life events, examined social support within interpersonal relationships and psychopathological symptoms and found that these variables were related reciprocally, thus emphasising a transactional model of stress. Findings from this study suggest that poor social support might place one at risk of experiencing anxiety, depression or somatic problems, or result in the tendency to perceive and respond to life events as negative, supporting a theoretical link with dysfunctional coping strategies dealing with stress.

In summary, distress in adolescence has been found in longitudinal studies to predict psychopathology and to be moderated by coping strategies and social support (as reviewed extensively in Grant et al., 2006). Furthermore, evidence highlights a relationship between poor psychosocial functioning and psychopathological symptoms, with social support acting as a protective mechanism in stressful life events, and coping acting as an operationalising mechanism, as an individual appraising stressful life situations responds by seeking social support resources.

6.2. Coping Styles during At-Risk Mental State for Psychosis

Coping strategies develop during early and mid-adolescence and are built on the experiences acquired with primary caregivers; additionally, they influence the management of new stressors that occur in late adolescence and early adulthood (Seiffge-Krenke, 2006). According to Folkman et al.'s (1986) stress-coping transactional model, coping is defined as a process of responding to stimuli evaluated

as being difficult or exceeding the internal resources of a person (in Seiffge-Krenke, 2006; Frydenberg, 1997), including behavioural, emotional and cognitive attempts to manage the demands imposed by such stressors. Problem-focused or approach-oriented coping involve attempts to address the stressor directly, for example by seeking support from others. Cognitive-focused coping involves conscious reflection about the problem and finding ways to resolve it satisfactorily (Seiffge-Krenke, 2006), while emotion-focused coping is characterised by attempts to regulate emotions or decrease emotional distress (e.g. through avoidance, minimisation, distancing or withdrawal) (Lazarus, 1993, cited in Seiffge-Krenke, 2006). Either way, coping functions as an emotion regulator.

Dysfunctional coping styles have been found to be associated with the severity of symptoms, poor psychosocial functioning and poor quality of life in patients with schizophrenia and the early onset of schizophrenia (Rudnick & Martins, 2009; Boschi et al., 2000). Studies regarding coping in people with psychosis demonstrate that these individuals are more likely to rely on passive, emotion-focused coping rather than active, problem-focused coping when dealing with stressful situations (Dangelmaier, 2006; Tait, Birchwood and Trower, 2004). Ponizovsky et al. (2013) found that patients with schizophrenia tended to rely on emotion-oriented coping styles rather than problem-focused solutions, while emotion-focused coping has been found to be associated with symptom severity in patients with a higher expression of negative symptoms (Wiedl and Schottner, 1991; Zappia et al., 2012).

These findings suggest that coping styles affect multiple domains of functionality and quality of life in individuals with a psychotic disorder, and they open the possibility of exploring associations between these features in the earlier stages of the illness. A study by Macdonald et al. (1998) compared a group of young people with early onset psychosis against non-clinical controls. The authors investigated if there were any differences in the groups in relation to coping with a range of stressful situations. The results reported in this study indicated that people

with early signs of psychosis coped less well than the non-clinical group and that they were most likely to use emotion-focused coping strategies.

Dysfunctional coping patterns are assumed to be a risk factor for psychosis, since they are already present in patients with first-episode psychosis (FEP). However, it remains unclear as to whether help-seeking patients symptomatically at risk of psychosis show coping patterns similar to those of FEP patients. To address this matter, Schmidt et al. (2014) compared the frequency of deficits in coping patterns between young UHR people and FEP patients. The results revealed that, compared to FEP, UHR patients reported even more deficits in positive coping strategies than their FEP counterparts. The authors concluded that dysfunctional coping patterns are present before the onset of psychosis and are promising predictors of the conversion to psychosis. Therefore, they appear to be important treatment targets for early intervention in psychosis, and they might be implicated in the aetiology of the “syndrome” in its early stages.

The evidence agrees that there is an association between maladaptive coping strategies in the development of psychotic symptoms; however, only two studies have addressed this issue in ARMS populations (Lee et al., 2011; Philips et al., 2009). In terms of coping styles in people with an identified ARMS, Lee et al. (2011) investigated coping strategies and their relationship with symptoms in 33 people at ultra-high risk (UHR) of psychosis compared to 22 recent-onset schizophrenia (SPR) participants and 33 healthy controls. In this study, UHR people were significantly more reliant on tension-reduction coping and less reliant on problem-focused coping than the healthy controls. Maladaptive coping patterns were associated with higher levels of negative symptoms, depression and anxiety in both the UHR and SPR groups. These findings corroborate previous studies' results and confirm that maladaptive coping strategies might have already emerged in the at-risk mental state phase and could influence symptom severity.

In terms of a longitudinal approach, results from the study by Pruessner et al. (2011) are crucial in clarifying the course of coping strategies in an early stage of psychosis. The authors compared levels of stress, self-esteem, social support and

active coping in 32 patients with a first episode of psychosis (FEP), 30 individuals at ultra-high risk of psychosis (UHR) and 30 healthy controls. In this study, UHR individuals reported significantly higher stress levels compared to FEP patients, and the UHR group also reported lower social support and active coping than the controls (results not explain by age and antipsychotic dosage in the FEP group). Furthermore in the UHR group, higher stress levels and lower self-esteem were associated with more severe positive and depressive symptoms. Stress was a significant predictor for both symptom measures or where the relationship was not moderated by self-esteem. The results suggested that individuals at UHR of psychosis experience high levels of psychosocial stress and marked deficits in coping strategies.

To address the question of how coping may change over time, and how coping styles may relate to changes in clinical symptomatology, Philips et al. (2009) compared a group of young UHR people (using PACE criteria) with a non-clinical cohort over 12 months in terms of their experiences of stress and coping. The results revealed no differences in terms of experiences of stress between the two groups, but the UHR participants were more likely to use emotion-focused and avoidance coping. In general, task-focused coping has been found to be more adaptive in dealing with psychotic symptoms and daily stressors than emotionally-driven coping strategies (Phillips et al. 2009).

In order to examine, using path modelling, the potential causal relationship between coping styles and the persistence of psychotic symptoms, Lin et al. (2011) conducted a study in an adolescent general population sample and found that adaptive task-oriented coping was related to a decrease in self-reported subclinical positive psychotic experiences over time, whereas emotion-related coping styles were linked to an increase in such experiences. However, these were not help-seeking individuals, and psychotic experiences were measured via a self-report questionnaire. Nonetheless, the same tendency of associations was reported by Jalbrzikowski et al. (2014) in a recent prospective 12-month study comparing a group of young CHR people (n=88) with a group of healthy controls (n=53) in terms of exploring coping strategies in relation to clinical and psychosocial outcomes.

Cross-sectional findings revealed that CHR subjects tend to use more maladaptive coping strategies, while longitudinal analysis revealed an association between maladaptive coping and more severe positive and negative symptoms. Furthermore, there was an association between the use of adaptive coping styles, less clinical symptomatology and better social functioning, suggesting that interventions in improving coping strategies may be a target in young people at-risk of psychosis.

To date, the only study to have examined coping as a predictor of responses to psychological treatment in CHR was conducted Kommesch et al. (2014). The researchers identified general coping styles in people at CHR of psychosis and examined if pre-intervention in coping behaviour plays a role in predicting responsiveness to early intervention. In this study, a sample of 128 help-seeking CHR outpatients was randomised in two treatment groups: one group receiving integrated psychological intervention (including cognitive behaviour therapy) (n=45) and the other group receiving supportive counselling (n=46) for 12 months, in order to examine if coping was a predictor of outcomes. Supporting previous findings, at the baseline, people with CHR relied on negative more than on positive coping strategies. The results indicate that at-risk persons might be limited in their ability to apply a broad range of coping strategies, and instead they are seemingly restricted to mainly negative coping strategies. In terms of pre-therapy, coping was significantly related to symptom improvement after treatment in both groups, although the predictive value of coping was higher for the group receiving supportive counselling. These findings – that coping style predicts symptom improvements after specific treatment – support previous studies of patients with fully established psychosis (Premkumar et al., 2011), and they indicate a need for psychosocial support and coping enhancements in people with an identified ARMS.

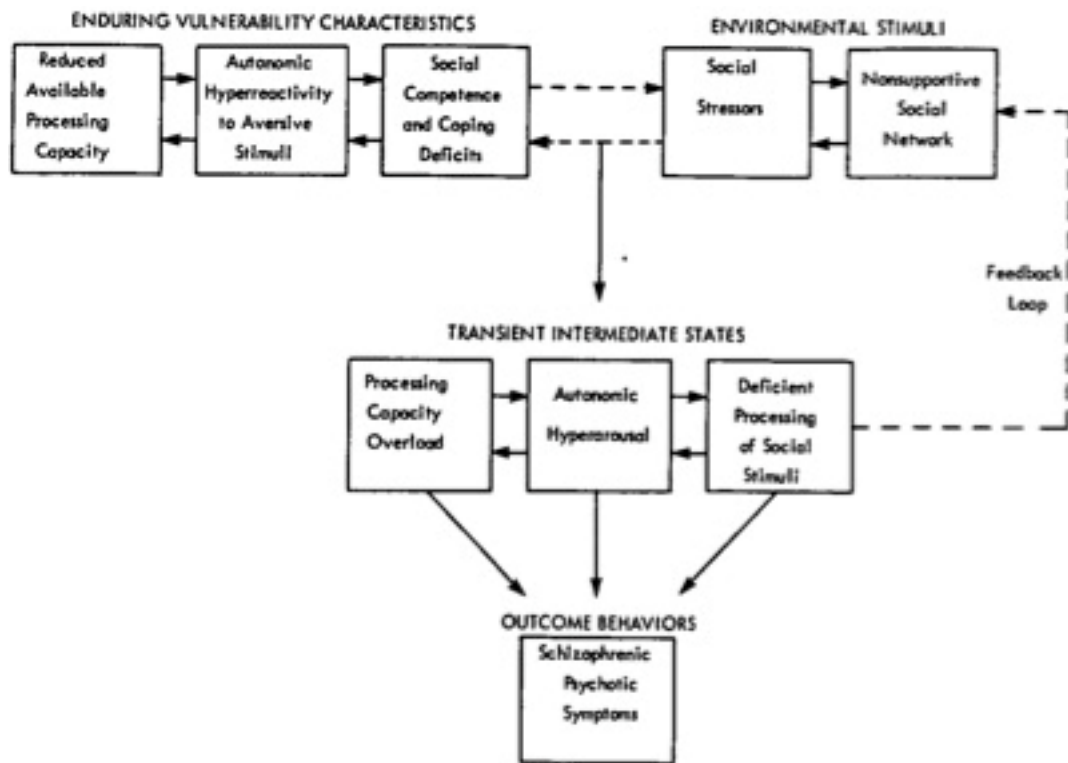
The evidence provided clarified the significant prevalence of emotion-oriented (non-productive) coping strategies in the ARMS population. Furthermore, it was empirically detailed that these dysfunctional strategies, employed to deal with stressful situations occurring during the at-risk mental state, are associated with both negative and positive psychotic symptoms. To obtain further insights into the role of

maladaptive coping (causing the poor management of stressful situations) in triggering psychotic symptoms, the stress-vulnerability model, relating to the development of psychotic symptoms, is considered an important element.

6.2.1. Stress-vulnerability model for the development of psychotic symptoms

The stress-vulnerability model for the development of psychotic symptoms was pragmatically proposed by Zubin and Spring (1977) and then redefined by Nuechterlein and Dawson (1984), bringing together the pioneering perspectives of Meehl (1962). The model postulates that a threshold of stressors exceeding an individual's coping capacity, and/or the employment of dysfunctional coping strategies, may promote psychobiological changes that lead to the development of psychotic symptoms (Philips et al., 2007; Philips et al., 2011). A diagram of the stress-vulnerability model is presented below.

Figure 2: Stress-Vulnerability Model for the Development of Psychotic Symptoms (Nuechterlein and Dawson, 1984)



As Nuechterlein and Dawson (1984) describe comprehensively, psychotic symptoms develop when ‘*preceding persistent vulnerability characteristics of the individual interact with stressful external environmental stimuli to produce transitional states of processing capacity overload, autonomic hyper arousal, and impaired processing of social stimuli preceding the onset of psychotic symptoms. These transitional states and their behavioral concomitants tend to increase the occurrence of environmental stressors by causing disruptions in the individual’s social and familial contexts. The feedback loop, in turn, leads to more severe processing capacity overload, autonomic hyper arousal, and poor processing of social stimuli. This is a continuous cycle, unless successfully broken, with, until the transitional states reach an individual’s threshold point for the development of psychotic symptoms.*

This general approach provides a useful basis for integrating biological and psychosocial approaches, in order to understand the development and progression of psychotic symptoms. Research has provided evidence that changing levels of stress as a result of life events are related to changes in symptoms in people suffering from schizophrenia (Normal and Malla, 1993). Briefly, stressful life events and biological stressors may exacerbate the illness by triggering the emergence or reoccurrence of psychotic symptoms. However, protective coping strategies may buffer the impact of these vulnerability markers by actually reducing symptoms. Furthermore, poor management of stressful situations causes distress and anxiety, which may in turn trigger psychotic symptoms in individuals with increased vulnerability. In conclusion, this thesis hypothesises that coping plays a mediating role in the management of an individual's regulation mechanisms, and an individual who utilises dysfunctional patterns of coping may be at an increased risk of developing psychotic symptoms.

6.3. Social Support in Early Psychosis

Social support is a heterogonous construct replete with various definitions and theoretical models, and so it represents a lack of conceptual specificity and ambiguous measurement (Buchanan, 1995). Several conceptualisations have been proposed (Veiel, 1985; Kaplan et al., 1977, Cobb, 1976; Brown and Harris, 1978; House, 1981; all cited in Cohen and Wills, 1985) in past studies. For instance, social support can be conceptualised as the existence of some kind of intimate tie, the structural property of one's personal social network, the provision of assistance, the feeling that support would be available, should it become necessary, and satisfaction with the level of social support received (e.g. Sarason et al., 1987). The majority of the research comparing the different aspects of the concept of social support indicate that perceived support, the broad perception that satisfactory support is available, forms the core of the concept (Sarason et al., 1987), but, as concluded by Lloyd (in Brugha, 1995), the conceptualisation of social support is of a 'multidimensional nature' (p.42).

The level of social support provided by interpersonal interactions during adolescence plays an important role when considering mental wellbeing (Seiffge-Krenke, 2000). The fundamental postulation in terms of wellbeing is that individuals who have better emotional and practical support are healthier than those who lack these functional features (Cohen and Wills, 1985; Gottlieb, 1985; Buchanan et al., 1995).

Two operational models of the effect of social support and stress have been proposed, to characterise the influence of social support in wellbeing: the direct effect model and the buffering effect model.

In terms of the direct effect model of social support in emotional health, low levels of social support and poor or absent significant relationships have been found to be associated with poor emotional health and significantly heightened vulnerability in relation to psychopathology (Cohen & Willis, 1985). Furthermore, and for the purpose of this thesis, during adolescence, deficits in psychosocial functioning have been found to play an important role in the development of psychosis. These findings were indicated, for example, in the study by Addington and Addington (2003), which compared social and occupational functioning in first-episode young people and a non-symptomatic control group and found at the one-year follow-up that the first-episode individuals suffered from significant social impairment compared to the controls. In this context, poor social and occupational functioning more than a defining feature of psychosis may occur before the first fully blown psychotic episode.

In terms of individuals with identified ARMS for psychosis, results from the study by Shim et al. (2007) are worth considering. The authors examined social functioning and psychological symptoms (using the CAARMS) between a group of UHR (n=32), genetic risk (n=32) and age- and IQ-matched healthy controls (n=30) in Korea. They found that both the UHR and the genetic risk groups showed significant social impairment compared to the healthy controls. UHR individuals were significantly more impaired than genetic risk individuals, and with regards to gender difference, males had had poorer social functioning compared to females. Shim et al. (2007) suggested that impaired social functioning in UHR individuals has

both trait- and state-like components, and social impairment appears to represent a mediating vulnerability factor for psychosis.

In terms of the buffering effect model, social support refers to the mechanisms by which interpersonal relationships protect one against a stressful environment. This protective effect of social support in the face of psychosocial stress has been termed the ‘buffering hypothesis’, which postulates that psychosocial stress has adverse effects on health and wellbeing in people that have poor social support resources (Cohen and McKay, 1984, p.253).

In the case of psychosis, social support has been found to influence the course of schizophrenia (argued by Beels et al., 1984), and taking into consideration the interactive developmental systems model of schizophrenia (further reading: Strauss and Carpenter, 1981), social support serves as a protective mechanism that eases coping and competence, moderating the deleterious effect of psychosocial and environmental stressors (Marsella and Snyder, 1981).

The study of social support in relation to stressful life events comprises all major fluctuations or crises within the network of potential social support resources. As mentioned earlier in this chapter, life events are seen as stressful changes in the status quo which may exacerbate psychological symptoms, and the consistency of available social support can buffer the effects of such stressful changes. However, this buffering mechanism must be carefully considered in the case of psychosis, since social support is a volatile process, both in its nature and in how it is evaluated by individuals. In the case of those with psychosis, the nature of the evaluation about available support may be distorted (Beels et al., 1984). As Beels et al. (1984) argued, social support should be *‘carefully applied in the case of psychosis, since the disorder has its own special sensitivity and environmental support’* (p.401).

Since the present thesis proposes a developmental perspective for the study of at-risk mental states for psychosis in young people, in accordance with Champion (1995), social support is going to be viewed from two different angles, namely the inner resources of the individual (including physical characteristics and biological predisposition, as well as the cognitive capacity to acquire and organise knowledge about the self and others) and the external social environment.

With regards to an individual's **inner resources** (and in line with Bowlby's attachment theory), an individual develops internal working models that guide the perception of future relationship experiences. In the present thesis, social support will be viewed as being bounded to an individual perception of the self and others as a regulator of an individual's wish to seek support (explored further in the next chapter). The external social environment component comprises the structural aspects of social support (sources of support, social networks and the quality of support) (Gottlieb and Bergen, 2010). According to Champion (1995), the developmental perspective of social support is formed through the interaction of these inner resources and the external social environment.

6.3.1. Source of Support in ARMS

Core sources of social support during adolescence are family, peers, partners, teachers and others, and those who receive good social support from these networks have been found to have better mental health than those who do not (Cohen and Wills, 1985). Erickson et al. (1998) longitudinally compared patients with a first episode of schizophrenia and affective psychosis in terms of their supportive social relationships. The results indicated that social support from non-family members in the social network predicted five-year adaptive functioning in the schizophrenia group but not in the affective psychosis group. Support from family did not predict a five-year outcome in either group. Together, these findings replicate and extend earlier findings indicating that social support predicts outcomes in first-episode schizophrenia.

With regards to core sources of social support for young people with ARMS, Ballon et al. (2007) conducted a comparative study between a sample of young people at-risk of psychosis, first-episode and normal controls, in which they examined social functioning in order to gain information on potential risk factors for schizophrenia. The authors found that at-risk and first-episode adolescents significantly differed from the normal controls in the domains of peer, family, work

and school relationships, thus concluding that deficits in these *support sources* may be potential risk factors for psychosis.

As mentioned earlier in this thesis, psychotic symptoms are thought to develop as a result of an interactional combination of underlying biological vulnerability, environmental stressors and social networks, with social support being postulated to act as a protective factor, as mentioned above (stress-buffering hypothesis). In this regard, and taking a developmental perspective on the role of social support in the advancement of psychotic symptoms, decreased levels of deficits in psychosocial functioning in at-risk patients may be the result of not only objective social competence, but also an individual's experience of interpersonal relationships.

It has been suggested that interpersonal interactions may be located at the core of psychotic experience, and they may also be present during the at-risk phase (Berry et al., 2007). It is possible that self-reported functioning and subjectively experienced interpersonal relationships in patients seeking help indicate a risk of psychosis, as argued by Salokangas et al. (2009). The authors, in a prospective study within the European Prediction of Psychosis group, investigated a sample of 219 vulnerable patients and 55 patients at current risk of psychosis. Risk of developing psychosis was associated with a decrease in functioning and with dysfunctional interpersonal relationships, while the current risk of psychosis was associated with the subjectively reported negative attitudes of others. In the same study, the negative attitudes of others were also associated with feelings of references for both vulnerable and at-risk patients.

6.3.2. Support Networks and the Risk of Psychosis

With regards to the external social environment component of social support from a developmental perspective (Champion, 1995), it is important to consider the size of social networks utilised by individuals (largely reviewed in Beels et al., 1984).

Research on the mechanism of social support, or the lack thereof, in psychiatric conditions gave rise to a definition posited by Caplan (1974, reviewed in Beels et al., 1984), which proposes that support within a personal social network refers to three support categories: *‘another individual, a network, a group or an organisation that provide individuals with opportunities for feedback about themselves and for validation of their expectation about others, which may offset deficiencies in those communications within the larger community context’*.

Mental health problems, according to Goldberg et al. (2003), are associated with smaller social networks. In the case of psychotic disorders, evidence shows that schizophrenic individuals have more limited networks than non-psychotic individuals (although these results were not classed as significant) (Cohen and Sokolovsky, 1978; Pattison et al., 1975), and these networks tend to consist, on average, of about five individuals, and these are less likely to be family members (Pernice-Duca, 2008).

Research, focusing specifically on the social support networks of individuals with psychosis, found that more than the small network circles, there is an association between small networks, longer DUP, poor premorbid adjustment and negative symptoms in patients with a first episode of psychosis Thorup (2006). Toldsdorf (1976) reported the same trend in FEP patients with restricted networks (although these were being treated with anti-psychotic medication, which may have lessened the ability to communicate with the patients in the assessment).

Additionally, a study by Macdonald et al. (2000), which compared the social networks and perceived social support of 26 people with early psychosis and 26 people without a mental illness, found that there were no differences between the two groups in perceived social support, number of family members and number of participants with acquaintances. However, the psychosis group identified significantly smaller networks with fewer friends – in other words, fewer people to turn to in a crisis.

Gayer-Anderson and Morgan (2013) systematically reviewed studies addressing social support networks, support and early psychosis. The findings of 38 papers (although methodologically heterogeneous) suggested that social networks

(particularly close friends) and social support are smaller for FEP patients and people with PLEs and/or schizotypal traits.

There is a lack of research focusing specifically on social support networks in samples of individuals with identified ARMS. However, the study by Fusar-Poli et al. (2010), which compared psychosocial functioning between a sample of at-risk mental state for psychosis subjects and a demographically matched general population, found that the at-risk mental state subjects were more likely to be unemployed, living in communal establishments or living alone, i.e. having a small *support network* and finding support in non-family members. These variables at the baseline were associated with an increased risk of developing psychosis within the following year. This indicates that during the at-risk mental state, an individual might already have reduced social networks which in turn amplify any pre-existing feelings of isolation and culminate in negative symptomatology.

6.3.3. Quality of Support and the Risk of Psychosis

The quality of social support networks in psychosis has been related extensively to the concept of expressed emotion (EE), which, in psychosis, is defined as an adverse family environment, involving the quality of interaction patterns and nature of family relationships among family caregivers and patients with schizophrenia (Brown, 1985; Kavanagh, 1992). EE refers to a caregiver's attitude towards a person with a mental disorder, and it is reflected in comments about the patient made to an interviewer.

EE has five components, including critical comments, hostility, emotional over-involvement, positive remarks and warmth (Brown, 1985). The influence of EE has been found to be one of the most robust predictors of relapse in schizophrenia (e.g. Brown et al., 1962), but for the purposes of this thesis it has been found to be a major psychosocial stressor (as argued by Amaresha and Venkatasubramanian, 2012). Furthermore, and as debated by Kavanagh (1992), EE plays a role in the timing of the initial episode.

Studies concerning the quality of family relationships in ARMS populations are limited, but the *quality of social networks* in UHR patients has been shown to

correlate with the level of functioning (Erickson et al., 1998). Additionally, family involvement, support and warmth predict improvements in negative symptoms and social functioning in UHR individuals (O'Brien et al., 2006). With regards to gender effects, Willhite et al. (2008), in a 12-month longitudinal study using the SIPS in a sample of 68 UHR patients, found that males reported less positive social support than their female counterparts, and they also felt they received marginally more criticism than their female counterparts, too.

6.3.4. Mediators of Social Support and the Risk of Psychosis

In terms of potential mediators of social support, and levels of positive symptoms, Sündermman et al. (2013) found in a sample of 38 people with an FEP that social support networks and social support are relatively low shortly after a first episode of psychosis, and sufferers relate to feelings of loneliness and affective and psychosis symptoms. In this study, loneliness was associated with paranoia and partially mediated through anxiety, suggesting that anxiety may be a pathway through which loneliness may drive paranoia. It was also suggested that loneliness might distort thinking processes by exaggerating threat appraisals, which is in line with cognitive models of psychosis (which postulate that individual appraisals of unusual experiences form and maintain the course of psychosis) (Garety et al., 2001). As for knowledge at the time of writing, there are no studies examining social support as a mediator of symptoms in help-seeking young ARMS people with psychotic experiences.

6.3.5. Social support and the development of Psychotic Symptoms

In patients with schizophrenia, studies have found a relationship between better social support, higher quality of life and functional status (Howard et al., 2000).

However, and since the development of psychotic disorders is influenced by environmental stressors (Corcoran et al., 2003) and studies in other clinical samples

have shown that social support can reduce/buffer the effects of such stressors (Cohen and Wills, 1985), social support is an important construct to be examined as a potentially influence in the earlier stages of psychosis.

In this regard, Erickson et al. (1998) longitudinally compared patients with a first episode of schizophrenia and affective psychosis in terms of their supportive social relationships. The results indicated that social support offered by non-family members in the social network predicted five-year adaptive functioning in the schizophrenia group but not in the affective psychosis group, while support from family members did not predict a five-year outcome in either group. Together, these findings replicate and extend earlier findings indicating that social support predicts outcomes in first-episode schizophrenia.

Similar results were reported in Norman et al. (2005), who examined the relationship between social support and a three-year positive and negative symptom outcome for a group of first-episode patients (n=113). In this study, higher levels of social support were found to correlate with lower levels of positive symptoms and few hospitalisations at follow-up. Furthermore, social support ratings were predictive of the level of positive symptoms.

In terms of addressing the issue of the importance of social support in the development of psychotic symptoms in people with an ARMS, studies remain lacking. Consequently, this thesis proposes that social support mechanisms interact in the same way as in people at the onset of psychosis, or with an identified psychotic disorder, and the evidence above is indicative of the role of social support in the formation of psychotic symptoms. For example, Schuldberg (1996) compared stress processes between psychosis-prone individuals and control subjects for scores relating to perceived social support. At-risk subjects contrasted with the controls by reporting (for the same stressful events) less perceived social support.

Dangelmaier (2006) examined perceived levels of social support in at-risk of psychosis individuals. The results suggested that at-risk individuals have negative social support compared with the control group.

Identifying risk factors that predict the severity of psychotic symptoms is fundamental to understanding the aetiology of psychosis. In this regard, social

support is an important link to follow in UHR studies. It is likely that a bidirectional relationship exists between symptoms and social support among UHR patients. However, if relationships between social support and functioning for UHR patients hold true in later analyses, then it would provide credibility to the importance of *psychosocial interventions* for this population.

Actually, a lack of social support was found to be a predictor for non-adherence to intervention treatment in FEP patients, emphasising the need for psychosocial interventions in improving social support in early psychosis (Rabiovitch et al., 2009). In this regard, psychosocial interventions in ARMS populations could be beneficial for both treatment adherence and psychosocial deficit reduction.

Since people tend to use available social support (family, peers, co-workers) to handle stressors, the construct of social support, in relation to its functional features, can be considered a coping resource (Dangelmaier et al., 2006). Additionally, in terms of its structural features, the informational, instrumental and emotional supportive roles played by significant others can be considered as perceived or received forms of social support. In terms of perceived social support, studies have found it to be associated with mental wellbeing (Dalgard et al., 1995; Kessler et al., 1985).

In line with the structural and functional features of social support presented above, and the assumption that better social support is associated with better physical and mental wellbeing, and it buffers the damaging mental and physical health impacts associated with major life events and chronic stress, and taking into consideration a developmental perspective, the present thesis aims at investigating the inner resources and the external social environment of the individual (as proposed by Champion, 1995) using the significant others scale (SOS) (Power et al., 1988, details in the Methodology Section). The scale combines structural and functional features in relation to social support (whether or not significant relationships exist, who they are, and the type of social support received, respectively) in a sample of help-seeking young people.

A study by Champion et al. (1995) using the SOS followed-up a sample of

young people aged 10 to 20 years, in order to assess family and peer relationships and the stability of social support perception continuity from childhood to adulthood. The results revealed an association between a better relationship with one's family in childhood and perceived and ideal support in adulthood. Furthermore, in this study, difficulties in interpersonal relationships during childhood were associated with higher discrepancies between actual and ideal social support SOS subscales in adulthood. Neeleman and Power (1994) found that emotional discrepancy scores ranged from 0.9 to 1.5 across three psychiatric groups experiencing deliberate self-harm, depression and psychosis, while practical help discrepancies ranged from 0.8 to 1.1. In addition, the received and ideal scores for both emotional and practical help in this sample were also similar to those previously reported for clinical groups (Power, Champion & Aris, 1988).

The present thesis aims at capturing the fundamental sources of social support, the emotions or practical functions they serve and the quality of the individual social networks. It then moves on to assess whether these functions mediate the effects of insecure attachment styles in the development of psychotic symptoms. Furthermore, and from a developmental viewpoint, this thesis proposes that poor social support is associated with dysfunctional interpersonal patterns in relationships and also with dysfunctional coping strategies used to deal with stressful situations, thereby placing an individual at higher risk of developing psychotic symptoms

Chapter VI: Emotion Dysfunction and Cognitive Models of the Development of Psychotic Symptoms

7.1. Emotion Dysfunction in the Development of Psychosis

One of the aims of the present thesis is to explore the role of emotional distress as a risk factor in the development of psychotic symptoms in young people. The link between emotional dysfunction and psychosis was first noted in Bleuler while considering that the primary features of schizophrenia were emotional difficulties, whereas the positive symptoms were simply secondary manifestations of the disorder (namely hallucinations and delusions) (Bleuler, 1924, cited in Cotton et al., 2012). This was also observed from the work of Jaspers and the emphasis on the problem of empathy (explored in the first chapter of the present thesis). This led to the latter distinction between affective and non-affective psychoses (as noted in Freeman and Garety, 2003). Most of the psychological informed theories of psychosis, proceeded from the understanding that affect and cognition are reciprocally linked (eg. Freud, 1911 and the theory of projection; Bateson, Jackson, Haley, & Weakland (1956) and the double blind theory; and Zuk, 1989, Zuk & Zuk (1992), and the writers' "learning to be possessed" theory).

Evidence shows that even non-affective psychoses present emotional dysfunctions (e.g. depressive symptoms) (Addington, 1998; Watson et al., 2006), being frequently established and inappropriately understood as comorbidities in clinical diagnoses (e.g. Depression) (Siris, 2000; Birchwood et al., in Jackson & McGorry, 2010). The emotional dysfunction features in psychosis are often associated with worst-case outcomes (Fallon et al., 1978), impaired functioning (Roy et al., 1983) and suicide (Fenton, 2000). The occurrence of these emotional symptoms is not very well understood, and their presence has been found to act as a risk factor in relation to the transition to psychosis (e.g. Yung et al., 2004; Verdoux et al., 1999). Furthermore, the emotional dysfunction prevalent in psychosis has been

acknowledged as playing a central, normal, direct and non-defensive role in cognitive models for the development and maintenance of psychotic symptoms – a notion which will be explored further in this chapter (Garety et al., 2001).

The understanding of the pathological process, and the nature of these emotional dysfunctions, has received much research interest, and several hypotheses have been suggested to clarify especially the common manifestation of depressive symptoms in psychosis: depressive symptoms as part of schizophrenia (Addington et al., 1998), as secondary post-psychotic phenomena (McGlashan and Carpenter, 1976), and depression as a side effect of pharmacotherapy (Rifkin, 1981).

However, and for the purpose of this thesis, the views presented in Birchwood (2003) are robust in the way they explain the potential pathways by which emotional dysfunction occurs in psychosis, as the author adds an important developmental pathway that is core to the present thesis. In his work, Birchwood (2003) suggests a distinction between three moderately independent pathways: *‘emotional disorder that is intrinsic to the psychosis diathesis, a psychological reaction to it, or the product of disturbed developmental pathways’* (Birchwood, 2003, p.373).

Depression is the most frequent *emotional disorder intrinsic to psychosis*, and it has been found to be highly prevalent and predictive of illness in patients with schizophrenia (Martin et al., 1985; Barnes et al., 1989; Siris, 1991; Hausmann and Fleischhacker, 2000; Rocca et al., 2005; Smith et al., 2006), first-episode psychosis (Cotton et al., 2012; Szafranski et al., 2010; Hollis, 2003) and prodrome (Hafner et al., 1999; Schultze-Lutter et al., 2007) and, as mentioned above, it is a forerunner in relation to transition to psychosis (Verdoux et al., 1999).

The association between positive and negative symptoms and depression remains unclear, but it is considered to occur based on biological and psychological processes. Some studies have revealed an association between depressive and negative symptoms, while other studies have uncovered an association between depressive symptoms and the development of positive psychotic symptoms (Tapp et

al., 2001; Norman and Malla, 1994); other studies, on the other hand, have found no indicators to back up this relationship (e.g. Markou, 1996). Rocca et al. (2005) examined the association between depressive symptoms and functional outcomes in patients with schizophrenia. Furthermore, the authors analysed whether depressive and negative symptoms presented different patterns of demographic, clinical and cognitive predictors. The findings suggested that depressive symptoms are mainly a function of the level of social adjustment, whereas negative symptoms constitute an indicator of the severity of schizophrenia. In this study depression was found to be a distinct dimension of psychosis.

Based on the notion of premorbid developmental and social impairment in patients with schizophrenia, a study of young people with an FEP, conducted by Hollis (2003), found that young people who develop schizophrenia have high levels of premorbid emotional dysfunction, such as social anxiety, social withdraw and feelings of isolation. Thus, these emotional distress features follow a developmental trajectory from the premorbid phase up to the development of psychosis, indicating that emotional disturbance is a highly significant factor and can precede the development of psychosis (Birchwood et al., 2010).

During the at-risk mental state, emotional distress is characterised by depressed mood, anxiety, irritability and restlessness, aside from attenuated psychotic symptoms (Yung et al., 2004; Yung & McGorry, 1996). In an attempt to characterise these early emotional dysfunction indicators, Hafner et al. (1999) reported two symptom dimensions: negative and affective dimensions. The authors found that the most prevalent prodromal symptom was depression (in 82% of prodromal individuals), followed by anxiety and worry. However, in order to produce a reasonable explanation for the relationship between emotional distress and the development of psychotic symptoms, it is necessary to understand what elements constitute psychological processes and the pathways involved in emotional dysfunction manifestations (Birchwood et al., in Jackson and McGorry, 2010).

7.2. Cognitive Models of Psychosis

Research on the aetiology of psychotic symptomatology is vast. To increase understanding of the development of psychotic symptoms, several theoretical models have been proposed. Until recently, the central theory was grounded in a medical framework in which the development of psychotic symptoms was a result of neurobiological conditions requiring medical treatment (Taylor, 1976). However, this medical approach focused solely on biological phenomena, therefore not really reflecting the role of social context within which genes and brains inevitably operate. One alternative to the medical model is the cognitive model developed mainly by Ellis (1962) and Beck (1976). The central view of this framework is that emotional problems are linked to distorted or irrational thought processes. In many instances individuals with psychopathology have a negative inner dialogue, which maintains the maladaptive behaviour.

When the cognitive model is applied to psychosis, - cognitive models of psychosis-, it assumes that the clinical approach to treatment of psychosis can be better understood according to the most prominent symptoms displayed by the individual, together with the emotional distress that the individual presents as a result of their experience of psychosis, and that this distress is determined by the interpretation the individual makes of their experiences (e.g. Bentall, 2003; Morrison 2003).

This symptom-based dimensional approach of psychosis, represents an articulation of theoretical models of the positive symptoms of psychosis, grounded in modern cognitive psychological concepts including inferential reasoning biases (Garety & Freeman, 1999); attribution bias (reviewed in Bentall et al., 2001), social cognitive impairments in the capacity to infer one's own and other persons' mental state, the so called *Theory of mind* (ToM), an influential model of social cognition in psychology (Frith 1992) and faulty source monitoring (Hemsley 1994),.

In the case of delusions Garety and Freeman (1999) appraised evidence and acknowledged that in comparison to non-delusional individuals, individuals with delusional ideation exhibit a socio-cognitive reasoning bias towards “jumping to conclusions”, meaning they tend to make quicker decisions about social situations, which is considered a maladaptive response towards threat. Frith (1992), recognise that individuals with persecutory paranoia display “Theory of Mind” deficits in understanding the intentions and motivations of others.

Several studies have provided evidence that individuals with paranoid delusions exhibit exaggerated “self-serving “ bias, compared to non-delusional individuals (eg. Kinderman et al., 1992; Martin and Penn, 2002). Individuals with persecutory delusions make relatively even-handed causal attributions about positive and negative events, but tend to evaluate them in a biased manner. Such an attributional style may preserve self-esteem by allowing the person with persecutory delusions to blame others, rather than oneself, for negative outcomes, and to take credit for positive outcomes (Bental et al., 2001; Kinderman et al. 1992).

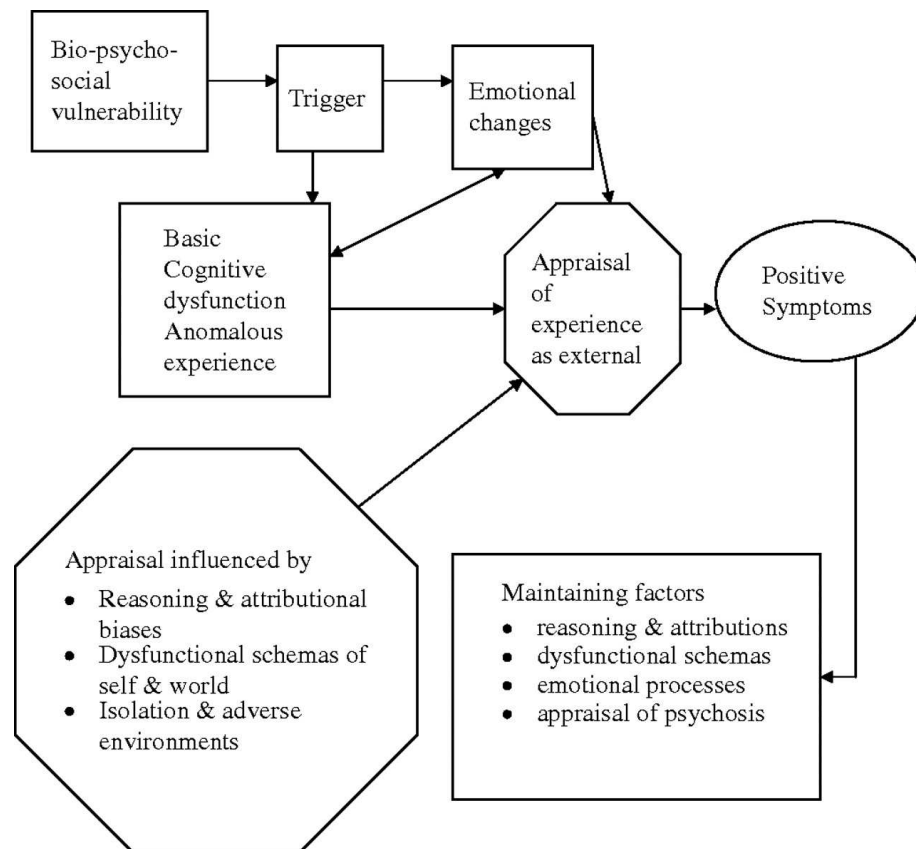
Articulating these theories it is interesting to observe an overlap that individuals with persecutory delusions have a bias towards recall of threat related information and selective attention. Hence, these individuals find it difficult to interpret social interactions, attend more readily to negative information, reach to quickly conclusions regarding others intentions and attribute negative outcomes to others.

In the case of hallucinations, psychological models of auditory verbal hallucinations propose that they arise through defective self-monitoring (Bentall, 1990), whereby inner speech is mistaken for an external event and misattributed to an external source (Johns et al., 2001). The assessment of reality discrimination can be done using reality- or source-monitoring tasks. These tasks require participants to discriminate between memories of their self-generated thoughts and memories of externally generated events, with results showing that patients with hallucinations are more likely than both non-hallucinators and controls to misattribute self-generated items to an external source (reviewed in Johns et al., 2001), and source-monitoring

errors occur more with emotional than with neutral material (Morrison & Haddock, 1997). Hoffman (1986) has suggested that auditory verbal hallucinations result from impaired monitoring of intended speech. Frith (1987, 1996) has proposed that hallucinations result from faulty monitoring of verbal thoughts as they are created, leading to a failure to recognize that thoughts are self-generated and their misidentification as ‘alien’ voices. The voices content is also emotionally valenced, as evidenced by findings that the majority of voice-hearing individuals also display low self-esteem and negative voice content (Close & Garety 1998), and the observation that emotional distress in individuals with voices is associated with beliefs about the voices (Chadwick & Birchwood 1994).

Morrison (1998a) has suggested that an internal or external trigger results in a normal auditory hallucination that is then misinterpreted as threatening the physical or psychological integrity of the individual and that these misinterpretations produce an increase in negative mood and physiological arousal, which produce more hallucinations, leading to a vicious circle. Concurrently, the misinterpretation of the hallucination provokes safety-seeking behaviours (including hypervigilance), which can both increase the occurrence of auditory hallucinations and prevent the disconfirmation of the misinterpretation (therefore maintaining it). Hence, this perspective suggests that it is the appraisal of auditory hallucinations that results in disability and distress (Morrison, 1998).

In order to understand the development of positive psychotic symptoms, Garety et al. (2001) proposed the cognitive model for psychosis. In this framework, psychotic symptomatology occurs in individuals with genetic predispositions, whereby a “trigger stress event” (such as an adverse life event, hostile environments, illicit drug use or periods of isolation) provokes emotional changes and disruption in cognitive processes (attention, perception or judgement), while at the onset the most prominent symptoms are delusional beliefs and hallucinations (Garety et al., 2001). The cognitive model for the development of psychotic symptoms is illustrated below in Figure 3.

Figure 3: Cognitive Model for Positive Psychotic Symptoms (Garety et al., 2001)

In this model, two combined pathways explain the psychological mechanisms implicated in the development of psychotic symptoms, both starting with a triggering event: a cognitive pathway and an affective pathway.

Disruption to the cognitive pathway (after a triggering stressful event) leads to anomalous experiences, with the content of these experiences being influenced by emotional changes and where the appraisal of the experience is external (the confusing experiences are caused externally). Thus, the externalising appraisal renders the anomalous experience psychotic (Bental et al., 2001 in Myin-Germeys and van Os, 2007). Disruption to the affective pathway (after a triggered stressful event) leads to a disturbed affect, which activates biased appraisal processes and maladaptive schemas of the self and/or others, thus leading to an externalising appraisal (Myin-Germeys and van Os, 2007). Small, everyday events, dealing with emotional changes and social isolation trigger the cognitive and affective

disturbances that cause psychotic experiences (White et al., 2000; Myin-Germeys and van Os, 2007).

Studies in people with an at-risk mental state have found that these individuals display a “jumping to conclusions” reasoning style, associated with impaired working memory and intolerance of uncertainty (Broome et al., 2007). Consistent with studies showing that ARMS individuals have working and episodic memory impairments (eg. Smith & Cornblatt, 2005; Wood et al., 2003; Seidman et al., 2006; Higuchi et al., 2013), there may exist an underlying tendency to develop abnormal beliefs and positive psychotic symptoms. This vulnerability in relation to cognitive disruption has been associated with childhood trauma and to dysfunctional family environments that can trigger negative schematic models of the self and the others, eventually leading to the development of negative aural experiences (Bechdolf et al., 2010; Thompson et al., 2009; Garety et al., 2001). In research, the association between these hostile family environments and psychosis has been explored through the already mentioned construct of heightened expressed emotion (EE) (Brown et al., 1985; Kavanagh, 1992), and actually a positive family environment has been found to be a predictor of symptom improvement and social functioning in young people at risk of psychosis (O’Brien et al., 2006).

Moreover, it has been suggested that these different pathways might represent the underlying mechanisms contributing to the clinical heterogeneous symptomatology of psychosis, which can be explained by two syndromes (Andreasen et al., 1990), namely the positive syndrome and the negative syndrome (stated in Myin-Germeys and van Os., 2007 based on the work of Andreasen, 1985; Carpenter et al., 1988; Crow, 1980; Murray et al., 1992; and others). The positive syndrome is characterised by the presence of positive symptoms such as episodic hallucinations and delusions, along with good clinical outcomes as a result of responding well to neuroleptics, and which are thought to be of neurochemical aetiology and highly reactive to environmental factors. On the other hand, the negative syndrome is characterised by negative symptoms such as avolition, alogia, intellectual and cognitive impairments, insidious onset, deteriorating course, poor

response to treatment with neuroleptics, with brain structural alterations that are partly present at birth (Myin-Germeys and van Os., 2007).

7.3. Emotional Dysfunction as a Covariate in Symptoms Development

Thus, the developmental pathways in symptoms occurrence strongly indicate that there is a covariation of emotional distress and psychosis. In support of the cognitive model, there is a high occurrence of negative interpersonal events and traumas in people with psychosis and some evidence from longitudinal studies to suggest adversarial environmental experiences can precede the onset of psychosis (Berry et al., 2006; Morrison et al., 2003). Support for this covariation effect also arises from the fact the cognitive model for psychosis proposes that for some individuals difficulties in earlier relationships with significant others, and interpersonal traumas lead to the formation of negative beliefs (Garety et al., 2001). Thus, this covariation effect comes from the fact that the cognitive models recognise the role of emotional dysfunction and regulation in the development, onset and course of psychosis. So, as argued by Mikulincer et al. (2003), the role of attachment-related strategies for the association between emotional regulation mechanisms and cognitive factors, support the expansion of the cognitive models for the development of psychotic symptoms.

7.4. Conclusions Drawn from Chapter VI

Emotional distress plays a covariation role in the risk of developing psychotic symptoms. Cognitive models for psychosis emphasise the role of early interpersonal experiences in the development of symptoms. In line with this theory, this thesis proposes that the development of psychotic symptoms could be grounded in the framework of attachment.

Furthermore, the evidence provided in this literature review shows that an increase in vulnerability to psychosis (from a psychopathological perspective) is

associated with interpersonal difficulties, emotional distress, a lack of social support and maladaptive coping, with attachment theory being thought to provide a useful framework for conceptualising the influence of these constructs on the risk of developing psychotic symptoms (Berry et al., 2007). Bearing in mind the recent advances in research in ARMS populations, and the need for studies exploring underlying psychological mechanisms from a dimensional perspective (vs. a categorical perspective), this thesis will explore how dysfunctional interpersonal schemas can lead to the risk of developing psychotic symptom dimensions, as proposed by the CAARMS (Yung et al., 2005).

In this regard, the next chapter will provide a brief description of the attachment theory and its role in explaining the relationship between early attachment experiences and the development of maladaptive coping strategies. Furthermore, this thesis proposes that the attachment system may be an important process in the development of psychosis, as it is triggered by and determines individuals' approaches to seeking help during periods of psychological stress. In addition, the next chapter will provide theoretical associations between attachment, deficits in interpersonal patterns of relationships and a lack of social support as constructs underlying the enhanced risk of developing psychotic symptoms.

Chapter VII: Attachment Theory: Theoretical Framework for the study of At-risk Mental States for Psychosis

The attachment construct has been recently included in the conceptual features of developmental psychopathology. The aim is to predict maladaptive behaviours or emotional difficulties, and their underlying psychological processes across the life-span, as well as the best means of preventing or ameliorating psychopathology (Rutter & Sroufe, 2000; Mikulincer et al., 2003). In the context of the present thesis, attachment theory forms the theoretical framework to understand the development, onset and course of psychosis. It comprises an interpersonal perspective that emphasises the importance of the early social environment, best conceptualised in Bowlby's theory.

In this chapter evidence of intrinsic theoretical associations between attachment and coping will be empirically demonstrated. Furthermore, and since attachment theory forms the ability to form interpersonal relationships, this thesis supports a relationship between dysfunctional attachment patterns and the development of difficulties in interpersonal relationships as core features to the risk of development of psychotic symptoms. As mentioned in the previous chapter, a lack of social support was found to relate with an increased risk of development of psychotic symptoms. For the purpose of this thesis, evidence of empirical studies associating attachment to the above mentioned coping, interpersonal, social support and emotional distress constructs will be presented from studies with help-seeking young people with an ARMS.

8.1. Attachment Theory

Bowlby (1969, 1973, 1980, and 1988) developed the attachment theory to explain the dynamic interaction between infants and their caregivers. In his work, he

conceptualised attachment as an affective bond between the infant and the primary caregiver, as well as a behavioural system operating flexibly in terms of set goals, mediated by emotion and in interaction with other behavioural systems (Schwannauer and Taylor, 2011).

Specifically, Bowlby mentioned that infants are born with a *repertoire of behaviours (attachment behaviours)* aimed at seeking and preserving intimacy with primary caregivers (*attachment figures*). Proximity-seeking, as an inborn affect-regulation device (*primary attachment strategy*), is intended to protect and to alleviate distress. Bowlby (1988) proposed that the successful accomplishment of these affect-regulation functions results in a sense of attachment security – a sense that the world is a safe place that one can rely on to protective others, and that one can therefore confidently explore the environment and engage effectively with other people.

These proximity-seeking behaviours are parts of an adaptive behavioural system (*attachment behavioural system*), with the ultimate goal of this system being to regulate negative affect and maintain homeostasis (Mikulincer et al., p.78). In Bowlby's theory, if attachment figures are responsive and sensitive to an infant's distress, the infant will develop a *secure attachment style*, which is associated with positive self-image, a capacity to manage distress and comfort with autonomy and in forming relationships with others.

Conversely, if caregivers are inconsistent in addressing the infant's distress, the infant learns to sustain or amplify emotional anguish, in order to provoke a reaction in the caregiver. Thus, the infant escalates levels of distress to get their attachment needs met satisfactorily (*insecure anxious or ambivalent attachment*). Moreover, if caregivers are unresponsive to an infant's distress, the infant learns to inhibit or suppress emotion, in order to provoke the caregiver. Thus, the infant deactivates their attachment system, which is associated with low levels of affect and avoiding close relationships (*insecure avoidant attachment*) (Mikulincer et al., 2003; Berry et al., 2003; Owens et al., 2013; Gajwani et al., 2013).

The empirical evidence for Bowlby's attachment theory summarised above was provided by the work of Ainsworth et al. (1978). Based on experimental studies

of infants' responses to separation and reunion with their primary caregivers (usually their mothers), Ainsworth et al. (1978) found that the quality of these attachment relationships was based on how much the infant could rely on the attachment figure regarding security. The "strange situation procedure" was developed to operationalise how children respond in relation to attachment and exploratory activities during times of high and low stress, with special attention given to the behaviour of the infant during separation and then reunion with the primary caregiver. This led to the identification of two attachment patterns – secure and insecure – with the insecure prototype being subdivided into *anxious-ambivalent* and *avoidant*.

Ainsworth et al. (1978) observed that infants classified as secure became distressed following separation from the primary caregiver and resisted strangers' attempts to comfort them. Securely attached infants appreciated their caregiver's return after separation, and when distressed they would seek proximity and were immediately comforted. These attachment behaviours infer that children with a *secure attachment style* experience their primary caregivers as sources of reliability which are capable of meeting their needs properly.

On the contrary, infants classified as anxious-ambivalent were extremely distressed following separation from the primary caregiver. During reunion they displayed ambivalent behaviour, demonstrating anxiety during interaction and seeking proximity while resisting caregivers' comfort attempts. According to Ainsworth et al. (1978), these children had experienced inconstant responses from their primary caregivers. When the infant was distressed, the primary caregiver was either responsive and sensitive or unresponsive and indifferent, so the infant learned to sustain or amplify emotional distress, in order to provoke the caregiver.

Infants classified as avoidant were not distressed as a result of separation, and their behaviours did not differ whether interacting with a stranger or with the caregiver. During reunion these children would avoid proximity or interaction with the caregiver. These behaviours infer that children had experienced their caregivers as dismissive while they were distressed, and they deactivated their attachment

system to avoid these experiences. Consequently, the infant learned to inhibit or suppress emotion, to stimulate a reaction in the caregiver (Owens et al., 2013).

In a review of Ainsworth et al.'s (1978) empirical strange situation procedure work, Main and Solomon (1990) identified a fourth prototype of attachment, the *disorganised-fearful* style. This pattern of attachment involves an inconsistent scheme for relieving attachment distress. Infants' behaviours were based on approach-avoidance, such as avoiding caregivers' attempts to comfort, or rising to welcome the caregiver and then falling to the floor. In this situation, primary caregivers responded to the infants' distress in a frightened or frightening way, which resulted in these disorganised behaviours. In this pattern of attachment, there was a lack of a coherent attachment strategy at separation from or reunion with the primary caregiver.

8.1.1. Internal Working Models

These early attachment interactions with primary caregivers are internalised, and they come together to form a model for future relationships outside primary attachment figures. In Bowlby's theory, these childhood experiences with primary caregivers influence future interpersonal functioning and mechanisms employed to regulate distress (regulation of the attachment behavioural system) through '*internal working models*'.

Internal working models (IWM) are '*representations about the self*' and '*representations about the others*' in relationships (Bowlby, 1980). Furthermore, IWMs are experienced-based predictive guides, representations that expose an individual's expectations, perceptions and behaviours within relationships. They encode schemas of evaluation that detect and react to threat, and they also predict what one might expect from others. As mentioned previously, these schemas then form the patterns of secure and insecure attachment (Ravitz, Maunder & McBride, 2008). Thus, IWMs form the basis of information processing and the regulation of emotions in response to anguish. Consequently, this affects the individual's cognitive and affective representations and expectations of others (Carr, 2006; Lewis, 2000).

One principle behind the attachment theory is that attachment experiences and internal working models continue to influence both existing and new relationships across a lifetime (Bowlby, 1980). Based on Bowlby's conceptualisation of internal working models, and subsequent empirical evidence progression in adult attachment theory (Hazan and Shaver, 1987, and romantic love as an attachment process; Mains and Solomon, 1990, and the adult attachment interview), Bartholomew and Horowitz (1991) incorporated the construct of internal working models in an interpersonal context.

The authors proposed that each internal working model could be divided into *positive* or *negative*. The authors posited that if a person's representation of the self is dichotomised as positive or negative (the self as worthy of love and care, or not), and if the person's representation of the other is also dichotomised as positive or negative (other people are seen as reliable and accessible vs. unreliable and rejecting), then four attachment prototypes are created. These are represented below in Figure 1.

Figure 4: Adult Attachment Model (Bartholomew and Horowitz, 1991)

		Positive (Low)	Negative (High)
MODEL OF OTHER (Avoidance)	Positive (Low)	<p>SECURE</p> <p>Comfortable with intimacy and autonomy</p>	<p>PREOCCUPIED</p> <p>Preoccupied with relationships</p>
	Negative (High)	<p>DISMISSING</p> <p>Dismissing of intimacy/Counter-dependent</p>	<p>FEARFUL</p> <p>Fearful of intimacy/Socially avoidant</p>

According to the model developed by Bartholomew & Horowitz (1991), a *secure attachment style* indicates a positive internal working model in which the self and others are valued. It is characterised by low attachment avoidance and low attachment anxiety.

In the secure prototype, close relationships are appreciative, and there is a capacity to maintain them without losing personal autonomy, as well as coherence and thoughtfulness in discussing relationships and related issues.

An *insecure preoccupied attachment style* indicates a negative internal working model of the self and a positive view of others. It is characterised by high attachment anxiety and low attachment avoidance. Moreover, there is an over-involvement in close relationships, a dependence on other people's acceptance for a sense of personal wellbeing, a tendency to idealise other people and incoherence and exaggerated emotionality in discussing relationships.

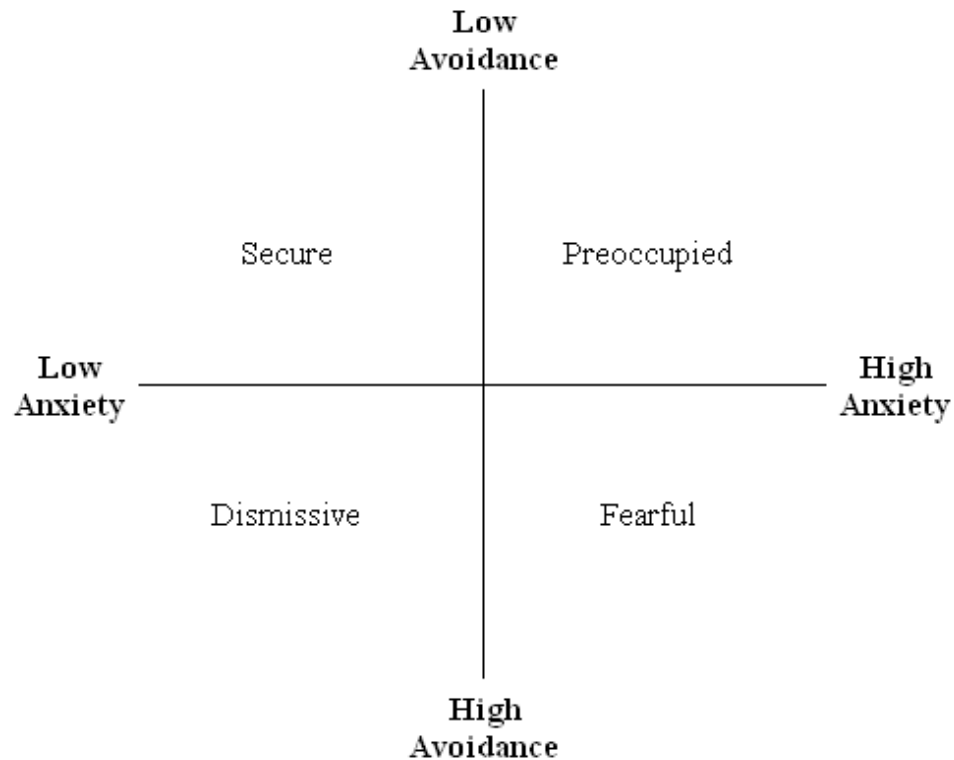
An *insecure dismissing attachment style* indicates a positive internal working model of the self and a negative view of others. It is characterised by high attachment avoidance and low attachment anxiety as well as by a downplaying of the importance of close relationships, restricted emotionality, an emphasis on independence and self-reliance and a lack of clarity or credibility in discussing relationships.

An *insecure fearful attachment style* indicates a negative view of the self and others. It is characterised by high attachment avoidance and high attachment anxiety. The insecure fearful prototype is characterised by the avoidance of close relationships because of a fear of rejection, a sense of personal insecurity and a distrust of others (Bartholomew & Horowitz, 1991, p.227).

Maintaining Bowlby's conceptual attachment processes of interpersonal functioning and emotion regulation, this model enables a pragmatic translation of attachment styles in two dimensions, namely attachment avoidance and attachment anxiety. The diagram below summarises this two-dimensional perspective of

attachment styles and the respective former designations of secure, preoccupied, dismissive and fearful attachment prototypes (as described in the work of Ainsworth et al., 1978; Main, 1984 and Bartholomew & Horowitz, 1991).

Figure 3: Representation of attachment study in a two-dimension space (Mikulincer, Shaver and Perger, 2003)



According to Mikulincer, Shaver and Perger (2003), the so-called “secure” attachment style involves low anxiety and avoidance, whereby the individual is comfortable with interpersonal interactions, is able to maintain interdependence, trusts of seeking support, and has functional mechanisms to cope with stress.

Anxious-ambivalent attachment involves high anxiety and low avoidance, there is a lack of attachment security and the individual has a strong need for intimacy, concerns about interpersonal interactions and fear of rejection. The avoidant attachment style involves high avoidance, and there is a lack of attachment security and the individual has a compulsive independence and avoids interpersonal

interactions. Areas with high anxiety and avoidance define unsuccessful strategies to engage in intimacy with others or to diminish stress, and they lead to the subsequent internalisation of negative inner representations.

8.1.2. Self-Report Measurement of Attachment Styles in Psychosis

The two-dimensional approach has received support from attachment construct researchers (Fraley et al., 2000; Shaver and Mikulincer, 2002). Additionally, it enables the assessment of attachment styles in clinical and community settings through the use of reliable and valid self-report measures, whereas other assessment tools (e.g. the Adult Attachment Interview, AAI, Main and Goldwyn, 1984) are less “service-friendly” due to the time they take to conduct the evaluation and the effort the AAI takes to score and code.

Evidence of the high prevalence of insecure attachment styles in patients with psychosis (extensively reviewed in Berry et al., 2007 and Gumley et al., 2013, see 4.1.3) ignited interest in conducting research in this population. But taking into account the assessment of attachment in individuals with psychosis, or those at clinical high risk, the AAI raises methodological concerns, since it is coded in terms of coherence of an individual’s narrative while relating to early experiences with caregivers. In this context, and since the presence of positive symptoms may involve disorganised speech and/or thought content disorder, the results of the interviews may consequently be affected (as argued by Turton et al., 2001). However, not all self-report measures are able to assess samples taken from those suffering with psychosis or individuals at clinical high risk.

Existing measures assess a person’s thoughts, feelings and behaviours in regard to close relationships, and they tend to focus mostly on romantic relationships (e.g. Bartholomew & Horowitz, 1991; Brennan et al., 1998). Considering that a high proportion of patients with psychosis are unlikely to be in a romantic relationship

(Hooley, 2010), Berry et al. (2006) developed in Manchester, United Kingdom the Psychosis Attachment Measure (PAM), the PAM was created based on the work of Bartholomew & Horowitz (1991). Details of this measure's validity and reliability in assessing attachment patterns, and its clinical utility, are presented in the Methodology section of the present thesis.

8.2. Attachment and increased risk of psychosis

Evidence shows that in individuals with psychosis there is a high prevalence toward the insecure attachment prototype, although there is no clear prediction of psychopathology from insecure attachment styles (Berry et al., 2007a; Dozier et al., 1991; Dozier, Cue and Barnett, 1994). For the purpose of this thesis, research in the field of attachment in developing psychosis is still very recent, and although studies of attachment patterns in schizophrenia have shown that an insecure avoidant attachment configuration is frequent in these patients (Mickelson, Kessler and Shaver, 1997), very little research has focused on attachment in ARMS populations. This chapter will clarify research supporting an association between attachment and the increased risk of psychosis. Furthermore, the theoretical links between attachment and coping and social support-seeking and interpersonal problems will explain the processes through which one may be at increased risk of psychosis.

In a systematic review, Berry, Barrowclough and Weardern (2007a) critically appraised studies corroborating higher levels of insecure attachment in samples of individuals with psychosis compared to controls. The reviewed studies were concordant in demonstrating the association between attachment and interpersonal factors, emotional distress and affect regulation in the development and maintenance of psychosis, although all the studies' investigated samples already displayed psychotic symptoms and/or had been diagnosed with a psychotic disorder. A cross-sectional study conducted recently by Gajwani et al. (2013), with 51 UHR participants, explored the role of affective deregulation in emerging psychosis via

attachment theory. In this study, 80% of the UHR sample was insecurely attached, therefore validating the hypothesis of a continuum in insecurely attached patterns from the at-risk mental state phase to florid psychotic syndrome. The results of this study substantiate the evidence citing insecure attachment patterns as predictors of emotional distress (Gajwani et al., 2013). The most recent systematic review of attachment amongst patients with psychosis (Gumley et al., 2013) identified 21 studies with a total sample of 1,453 participants. The results indicate moderate associations between attachment insecurity (in a two-dimensional approach to attachment anxiety and avoidance) and more interpersonal problems, more avoidant coping strategies, more positive and negative symptoms and more affective symptoms problems.

Furthermore, insecure adult attachments, which are associated with negative beliefs about the self and others, as well as maladaptive coping methods of regulating distress, may increase susceptibility to symptoms or have an adverse effect on the course of psychosis once symptoms are present (as argued by Berry, Barrowclough & Wearden, 2007; and Quijada et al., 2012). The role of attachment patterns in the association between cognitive factors and emotional regulation also helps to expand the cognitive models of psychosis (Garety et al., 2001).

In light of the present thesis, attention will focus on the association between attachment and developing an at-risk mental state of psychosis, as well as on the debate surrounding the underlying psychological mechanisms potentially affecting this path. It is critical to understand how attachment experiences influence the development of psychosis, and how potential underlying psychological mechanisms that are central to attachment theory have an effect in this respect.

8.2.1. Attachment and Coping

Mindful of Bowlby's attachment theory, in times of stress (during encounters involving physical or psychological threat) individuals activate their attachment system to regulate emotions, and they use their internal and external attachment-

related resources to cope accordingly. If a secure attachment has been acquired as a result of positive interactions with primary caregivers, the individual is capable of having positive beliefs about the self and others, and he or she is able to regulate emotions in times of stress. On the contrary, if attachment insecurity was attained as a result of dysfunctional interactions with primary caregivers, the individual will develop negative beliefs about the self, others or both. This triggers obstacles in the affect regulation mechanism, causing the inadequate management of stress and the onset of exaggeration (high attachment anxiety) or minimising (high attachment avoidance) strategies to deal with stressful situations. These attachment strategies, employed to regulate emotions when trying to deal with stress, can be *operationalised* through coping strategies (according to Mikalincer et al., 2003).

Patients with schizophrenia, and with an FEP have been found to rely on emotion-oriented coping styles rather than the problem-focused option (e.g. Dangelmaier, 2006; Tait, Birchwood and Trower, 2004; Ponizovsky et al., 2013; Schmidt et al., 2014). For the purposes of this thesis, and as detailed in Chapter IV, help-seeking young people with an ARMS tend to adopt the same maladaptive pattern of coping (e.g. Jalbrzikowski et al., 2014; Lin et al., 2011; Philips et al., 2011; Lee et al., 2011).

As argued by Mikulincer & Florian (1998), if an individual with an avoidant attachment style has negative expectations about seeking help, they will attempt to regulate distress through avoidant coping styles. Analogously, individuals with preoccupied attachment styles have more positive beliefs about help-seeking, but they may still be unsuccessful in regulating distress through seeking support or by using self-regulation methods. Dysfunctional coping in relation to emotional distress has been theoretically proposed to influence the course of psychosis (recapping on the vulnerability-stress model for schizophrenia, Nuechterlein & Dawson, 1984). Furthermore, adaptive coping has been found to be associated with better recovery following the onset of symptoms (McGlashan, 1987).

To enhance understanding of the intrinsic association between attachment and coping strategies in dealing with stress in psychosis, the concept of coping will now

be reiterated. Coping is defined as a process of responding to stimuli appraised as difficult or as exceeding the internal resources of the person (Seiffge-Krenke, 2006; Frydenberg, 1997). Problem-focused or approach-oriented coping involve attempts to address the stressor directly, for example by seeking support from others (Lazarus, 1993 quoted in Seiffge-Krenke, 2006). Cognitive-focused coping involves conscious reflection about the problem and how to resolve it satisfactorily (Seiffge-Krenke, 2006), while emotion-focused coping is characterised by attempts to regulate emotions or decrease emotional distress (e.g. through avoidance, minimisation, distancing or withdrawal) (Lazarus, 1993, cited in Seiffge-Krenke, 2006). Attachment experiences affect the emotional and practical strategies an individual is able to use to diminish distress. Results from the study by Dozier and Lee (1995) support the association between attachment insecurity, less effective methods for dealing with stress and higher levels of psychopathology. Moreover, Tait et al. (2004) found in a sample of 50 people with psychosis that insecure attachment was associated with an avoidant coping style (sealing over). In this study the authors also found that “sealing over” was associated with more anxiety about interpersonal rejection, lower levels of comfort with closeness and greater dependence within relationships.

The evidence provided above suggests that there is an association between attachment insecurity and maladaptive coping strategies. However, there is a lack of research to suggest that coping acts as a potential mediator in the association between attachment and the risk of psychosis. This evidence is also uncorroborated in help-seeking young people during the at-risk mental state. To address this deficit, in the present thesis it is proposed that coping strategies will have an indirect effect on the relationship between attachment and increased risk of psychosis, both in help-seeking young people and also in those young people with an-at-risk mental state for psychosis.

8.2.2. Attachment styles and interpersonal problems

Evidence suggests that interpersonal problems predispose individuals to developing psychosis (e.g. Bartholomew & Horowitz, 1993; Mason et al., 2004), and one can therefore assume that greater attachment insecurity is associated with more interpersonal problems. One central notion in the attachment theory is that interpersonal interactions are influenced by the way in which an individual incorporates early attachment experiences. Attachment theory structures the nature of interpersonal difficulties in psychosis, as interpersonal difficulties associated with each attachment prototype are construed in terms of attachment strategies developed as adaptive responses in previous interpersonal relationships (Berry et al., 2007; Mallinckrodt, 2000). In non-clinical samples, studies have found that young people with non-clinical psychotic phenomena present insecure attachment, and insecure attachment is associated with interpersonal problems (Berry et al., 2006).

As argued by Bartholomew & Horowitz (1993), interpersonal problems arise in part as a result of early attachment experiences, and different attachment styles correspond to different types of interpersonal problems. The authors discuss in their article that, for example, an individual with a dismissive attachment prototype has the tendency to have fewer intimate relationships, with research showing an association between dismissive attachment and hostility. In the case of preoccupied attachment styles, research reveals an association with over-intrusiveness, and fearful attachment styles have been associated with lack of assertiveness (Horowitz, Rosenberg, & Bartholomew, 1993).

The model developed by Bartholomew and Horowitz (1991) (clarified at the beginning of this chapter) was grounded in Bowlby's (1977) suggestion that, over time, children internalise early attachment experiences and use their internal working models to decide whether or not the attachment figure will respond to calls for support and protection, as well as whether or not the self is the sort of person toward whom anyone, and the attachment figure in particular, is likely to respond in a helpful way (Bowlby, 1977, p.204, cited in Horowitz, Rosenberg, & Bartholomew, 1993). In the review carried out by Berry et al. (2007), the authors propose incorporating the attachment theory concepts of the affective and interpersonal nature of working models with existing social cognitive models of psychosis (Garety

et al., 2001). According to the authors, this could improve understanding of different types of interpersonal events in developing specific beliefs about the self and others, which is of particular importance in the case of developing psychotic symptoms.

Evidence from a number of studies supports an association between attachment and more interpersonal problems. Dozier et al. (2001), for instance, found that those with avoidant attachment were off-task significantly more than others, were more dismissive of their significant others and were more confused following interactions with case managers. In another study, Dozier et al. (1991) identified the increased use of insecure attachment strategies (avoidance and preoccupation) amongst families with greater expressed emotions (over-involvement). Moreover, in a study by Berry et al. (2008), the authors found associations between greater interpersonal problems and increased attachment avoidance and anxiety, with individuals with higher attachment anxiety displaying more attention-seeking behaviour, and individuals with higher attachment avoidance displaying more hostility. In non-clinical samples, studies have found that young people with non-clinical psychotic phenomena present insecure attachment, and insecure attachment is associated with interpersonal problems (Berry et al., 2006).

Similar results were reported by Meins et al. (2007) in a non-clinical sample, in that individuals reporting high levels of paranoia scored higher in relation to attachment anxiety and had less perceived parental care.

These findings suggest that attachment style is a meaningful individual difference variable in people with psychosis, and it may be a very important predictor of symptoms and interpersonal problems.

8.2.3. Attachment and Social Support

As mentioned previously in this thesis, social support can be defined broadly as the comfort, assistance, and/or information one receives through formal or informal social contacts (e.g. Sarason, Pierce & Sarason, 1990). Several authors have pointed out that the sense of social support – the generalised appraisal that one is cared for and valued – can be understood through the framework of attachment

theory (Bowlby, 1969, 1973, 1980). This intrinsic theoretical and empirical relationship between attachment and social support is based on the hypothesis that perceived support is a consequence of internal working models of the self and others, generated in infancy, which is equated with the secure attachment style. Avoidant and anxious/ambivalent persons hold on to representations of the self and others that make them prone to encoding and recalling instances of helpful behaviour as being less supportive (e.g. Sarason, Pierce & Sarason, 1990).

This view is supported by Florian, Mikulincer & Bucholtz (1995), who also argued that attachment could help to understand how the sense of social support originates. Specifically, the authors suggest that the sense of social support can be related to the concept of secure attachment, since secure relationships in infancy as those interactions in which parents are responsive to infants' distress, assist infants in regulating tension and subsequently engender relief and comfort. The responsiveness of parents to infants' distress signals, and their availability in stressful situations, provides infants with a "secure base" and fosters the sense of a "good supportive world." Conversely, children with an insecure attachment (either avoidant or ambivalent), who grow up with doubts about the extent to which attachment figures will comfort them in times of stress, may develop a generalised belief in a 'non-supportive world' (Mikulincer & Bucholtz, 1995, p. 666).

Thus, a secure attachment style includes the better self-regulation of emotional distress. Also in line with the attachment theory is the central notion, formulated both theoretically and empirically, that the ability of an individual to regulate their distress through internal working models affects perceived levels of social support.

This evidence was reported, for example, in the study by Priel & Shamai (1995) in a population of 328 young people, where the authors found that 59% of these were classified as securely attached, 31% as avoidant and 10% as ambivalent. In addition, securely attached individuals were less anxious and depressed than insecurely attached subjects, they perceived more social support in their environment and were more satisfied with it. As argued by Kobak and Sceery (1988), securely attached individuals tend to acknowledge distress and are effective in turning to

others for support. Conversely, ambivalently attached persons are hyper-vigilant in relation to their negative feelings, while avoidant persons have restricted knowledge of their feelings and therefore tend to turn less to others for support, as they learned as infants not to use their caregivers as a source of comfort and support to regulate negative effects and feelings of emotional distress.

In support of these differences between different attachment styles resulting in different patterns of support-seeking, the results of Ognibene & Collins (1998), from a total of 81 young adults, found that secure individuals felt there was more available support from friends and family and therefore sought more social support in response to stress. In contrast, the authors found that subjects with a dismissive and fearful attachment style (insecure attachment) were much less likely to seek social support, and they were more likely to distance themselves in some contexts. In the study by Blain, Thompson and Whiffen (1993), higher levels of perceived social support occurred among secure individuals. These results were also corroborated in the study by Davis, Morris & Kraus (1998), who found that persons with a secure attachment style reported greater global support as well as more support from their family, friends, faculty advisors and romantic partners.

In two studies, Collins, Feeney and Brooke (2004) found that insecure participants (anxious and avoidant) who received low-support messages appraised these messages more negatively, rated prior behavioural interactions with partners as having been less supportive and performed significantly worse at their task compared with secure participants (first study, N=95 couples). The researchers then asked partners (second study N = 153 couples) to send in genuine support messages, and the results showed that insecure participants perceived their partners' messages as less supportive, even after controlling for independent ratings of the messages and relationship-specific expectations. Findings from these studies support evidence that individuals are influenced to evaluate their support experiences consistent with their attachment working models.

Thus, evidence has consistently shown that insecurely attached adults report more negative affect, higher levels of distress (Mikulincer, Florian & Weller, 1993; Schwarzer & Leppin, 1989) and higher levels of susceptibility to psychopathology

(Dozier et al., 1991; Lane et al., 1990). Mikulincer, Florian & Weller (1993) found that attachment style influenced not only the level of distress reported when in a stressful situation, but also its manifestations: individuals with an anxious/ambivalent style of attachment expressed their discomfort more directly and in a wider variety of ways (anxiety, depression, hostility, somatisation, cognitive intrusions and cognitive avoidance), while avoidant people showed their distress only in the most indirect ways (hostility, somatisation and cognitive avoidance).

Studies assessing the multifaceted nature of social support usually differentiate between different components of social support (emotional, instrumental) and between different supportive figures (e.g. parents, friends and lovers). Florian, Mikulincer & Bucholtz (1995) found in a population of 150 undergraduate students that secure individuals perceived higher levels of emotional and instrumental support and reported seeking more emotional and instrumental support than avoidant and ambivalent persons did. A study by Moreira et al. (2003), in a sample of 182 young people, found that support provided within an intimate relationship had a reduced effect among individuals with an insecure attachment style, particularly while support provided within more casual relationships had a stronger effect among insecure individuals, particularly if these were of the avoidant type.

For the purposes of the present thesis, social support and attachment have been also found to be associated with the effects of the attachment style in relation to the search for support. Actually, Collins & Feeney (2000) found that individuals with attachment avoidance were less effective in support-seeking when disclosing a personal problem to their dating partners. Furthermore, the authors found that anxious/ambivalent participants were less effective support providers when responding to their partners' disclosure.

In terms of addressing the issue of social support playing a mediating role between attachment and the occurrence of psychological distress, Larose & Bernier (2001) found in 62 young people that a dismissive attachment tendency was associated with difficulties in gaining assistance from peers and teachers, and it was also associated with peer-reported withdrawal. A preoccupied tendency was

associated with stress, distrust in potential supporters, difficulties in seeking help from teachers and loneliness. Moreover, stress, distrust and help-seeking mediated the link between preoccupied attachment and loneliness, whereas the relation between dismissing attachment and withdrawal was not mediated by help-seeking. Ana & Barnett (1999) found after two years of follow-up in 56 African-American children from low-income urban families that attachment predicted perceived social support and that insecure attachment predicted self-reports of behavioural problems and parental reports of internalising issues. In this study, the authors also found that perceived social support was associated positively with viewing ambiguously depicted actions as prosocial rather than as aggressive. Perceived social support was found to mediate the relationship between attachment and adjustment.

There is a lack of research addressing the mediating role of social support in the relationship between attachment insecurity and the risk of developing psychosis. However, as argued by Owens, Haddock & Berry (2013), evidence indicates that the links between attachment insecurity, poor stress regulation and low perceived social support provide potential mechanisms through which insecure attachment may contribute to psychosis. Attachment theory provides a framework for conceptualising the role of social cognition, interpersonal experiences and the regulation of affect in developing both interpersonal functioning and psychological distress (Mallinckrodt, 2000). Thus, since psychosocial models of psychosis (Garety et al., 2001) highlight the importance of negative beliefs about the self and the social world in terms of both vulnerability and the maintenance of symptoms the present thesis proposes that social support can have an indirect effect on the relationship between attachment and the actual risk of psychosis.

8.2.4. Attachment Insecurity and Psychotic Symptoms

As previously described, adult attachment is commonly measured on two orthogonal dimensions of attachment insecurity (Fraley et al., 2000). These dimensions are associated with specific cognitive and emotional responses when individuals are faced with distress. Recapping, the attachment avoidance dimension

is associated with compulsive independence, denial or non-recognition of emotional response and a suppressive regulation strategy, while the attachment anxiety dimension is associated with a cognitive model of vulnerability, compulsive threat monitoring and exaggeration of negative affect (eg. Mikulincer and Shaver, 2007; Goodall et al., 2015).

Current evidence supports an association of attachment insecurity in relation to outcomes including positive, negative and disorganization symptoms (as reviewed extensively in Gumley et al., 2013). For the purposes of this thesis, it is vital to understand how the two attachment dimensions (attachment avoidance and attachment anxiety) explain the development of specific psychotic symptoms.

Avoidant attachment style has been found to be associated with severity of both positive and negative symptoms (Berry et al., 2008; Ponizovsky et al., 2007), rejection of treatment, less self-disclosure (Dozier, 1990) and interpersonal hostility. Furthermore, avoidant-attached individuals were found to deny their distress and were reluctant to seek help (Vogel and Wei, 2005). As avoidant attachment style is associated with factors that are impeding the building of a strong therapeutic relationship (i.e. less self-disclosure and interpersonal hostility) and has already been found to be associated with difficulties in therapeutic relationships (Berry et al., 2008; Dozier et al., 2001), avoidant attachment might be considered a risk factor for building a strong therapeutic bond with the patient suffering from schizophrenia.

Anxious attachment style is primarily associated with overly demanding behaviour (Berry et al., 2008), but is also associated with depression (Conradi and de Jonge, 2009; Reis and Grenyer, 2004).

In terms of positive symptoms, Berry et al. (2008), in a sample of 96 patients with schizophrenia, found an association between more psychiatric symptoms and higher attachment anxiety and avoidance; however, in this study, only attachment avoidance was found to be associated with more positive symptoms and paranoia. In another study, Berry et al. (2007) found that attachment style predicted schizotypal features of unusual experiences, and cognitive disorganisation when earlier experiences in relationships were controlled, thereby enhancing the credibility of

conducting research into the influence of attachment on developing psychotic symptoms.

The study by Kvrđić et al. (2011) corroborated these results, since the researchers also found an association between attachment avoidance and positive symptoms in a total of 127 patients suffering from chronic schizophrenia or schizoaffective disorder. In the study by Ponizovsky et al. (2013) of FEP patients, preoccupied attachment and attachment avoidance were predictors of delusion severity. In the same study, the authors found that preoccupied and avoidant attachment were also predictors of greater persecution/suspiciousness. Considering the work of Trower and Chadwick (1995), there is a distinction concerning “poor me” paranoia, related with the belief that persecutory delusions are undeserved and associated with higher self-esteem, and “bad me” paranoia, related with the belief that persecutory delusions are deserved and associated with lower self-esteem. Since in attachment theory different persecutory beliefs arise from early interpersonal experiences, these two types of paranoia could be understood as avoidant and anxious attachment forms, because both are associated with negative beliefs about others. However, further studies are needed, to test this hypothesis empirically.

Ponizovsky et al. (2013) also found that attachment avoidance was a predictor of greater levels of hallucinations. In the study by Tait et al. (2004), the results also revealed an association between higher attachment anxiety and more positive symptoms in 50 patients diagnosed with schizophrenia.

In terms of distress associated with hearing voices, Birchwood & Chadwick (1997) associated this psychotic symptom with beliefs about the voices’ omnipotence and malevolence. Specifically, the authors found that distress arising from voices was linked to beliefs about voices and not to voice content alone. In another study, Birchwood et al. (2000) found in 59 voice hearers that distress caused by the phenomenon (distress in perceptual abnormalities) might be influenced by the individual experience with voices, which in line with the attachment theory might be influenced by the interpersonal schemes developed in early attachment relationships (Berry et al., 2007).

In their study, Birchwood et al. (2000) further argued that power imbalances between the individual and his persecutory ideas may have origins in the appraisal that the individual makes of his social world and the sense of group identification and belonging. Since attachment theory postulates that working models represent previous interpersonal experiences, these may actually influence the relationship with voices and subsequent levels of anguish.

Thus, and according to Berry et al. (2007), individuals with a fearful attachment style will be more likely to believe voices are powerful and malevolent and experience higher levels of distress in relation to voice hearing.

A similar trend of results was reported in the study by Berry et al. (2009). The authors found that higher attachment anxiety was associated with greater severity of voices and greater distress in relation to these voices. Supporting these results, Arbuckle et al. (2012) found in their study that key worker informant-reported attachment avoidance was associated with auditory hallucinations, and that attachment avoidance in relation to team relationships was associated with the greater duration, frequency, intensity, conviction and disruption of delusional thoughts.

In a prospective study, Berry et al. (2008) investigated associations between attachment and interpersonal functioning, in 96 patients with psychosis. The results indicated that avoidant attachment is associated with positive symptoms, negative symptoms and paranoia. In this study, attachment ratings were relatively stable over time, although changes in attachment anxiety were correlated positively with changes in symptoms. Predicted associations between high levels of attachment anxiety and avoidance and interpersonal problems were also supported.

In terms of the association between attachment styles and negative symptoms, studies have found a link between social withdrawal and emotional blunting as methods of coping with the stress associated with positive psychotic symptoms (Andreasen, et al., 1990). The abovementioned study by Berry et al. (2008), using the PAM, found an association between attachment avoidance and greater levels of

depression. Also using the PAM, Arbuckle et al. (2012) found a link between greater depression and more attachment avoidance in general, and the avoidance of key worker relationships specifically.

In addition, the study by Kvrgetic et al. (2011) found an association between depression and attachment anxiety, as well as between depression and attachment avoidance. Since individuals with dismissive attachment styles tend to use avoidance to respond to distress, these individuals could be at increased risk of negative symptoms (as argued in Berry et al., 2007).

In the evidence provided in the literature, there is strong support for the link between attachment insecurity (both attachment anxiety and attachment avoidance and increased levels of psychotic symptoms. At the moment, there is a gap in research addressing this issue in help-seeking populations at risk of psychosis; however, it is proposed that there exists in this population an association between attachment insecurity dimensions and specific symptoms as the one seen in people diagnosed with psychosis.

8.3. Conclusions drawn from Chapter VII

Recent cognitive psychosis models (Garety et al., 2001) highlight the role of earlier interpersonal experiences with significant others in the development and maintenance of psychotic symptoms (Owens, Haddock & Berry, 2013). These cognitive models propose that, for some individuals, difficulties in earlier relationships with significant others, and interpersonal traumas, lead to the formation of negative beliefs (Garety et al., 2001). In support of these models, there is a high occurrence of negative interpersonal events and traumas in people with psychosis, and there is some evidence from longitudinal studies to suggest that adversarial environmental experiences can precede the onset of psychosis (Greenfield et al., 1994; Berry et al., 2006; Morrison et al., 2003).

Furthermore, insecurely attached individuals tend to have negative beliefs about the self and others, as well as maladaptive coping methods for regulating distress, thus predisposing them toward an increased susceptibility to symptoms or

having an adverse effect on the course of psychosis once symptoms are present (as argued by Berry, Barrowclough & Wearden, 2007).

Findings suggest that attachment style is a meaningful individual difference variable in people with psychosis, and it may be an important predictor of symptoms and interpersonal problems. As mentioned earlier in this chapter, Berry, Barrowclough and Wearden (2007) recently reviewed and critically appraised studies suggesting higher levels of insecure attachment and dismissing attachment, in particular in samples of individuals with psychosis compared to controls. The reviewed studies were in agreement as far as demonstrating the association between attachment and interpersonal factors, emotional distress and affect regulation in the maintenance of psychosis, although all of the studies' investigated samples were already showing psychotic symptoms and/or had been diagnosed with a psychotic disorder.

This brings us to the gap in existing evidence and opens up the possibility of investigating the roles of attachment, interpersonal functioning and emotional distress as possible interrelated factors in an at-risk mental state sample. It must be highlighted that, to the best of our knowledge, no study has investigated meditational effect constructs in this particular population. Moreover, to the best of the author's knowledge, no study has investigated these constructs as potential mediators of the relationships between attachment and the increased risk of psychosis.

Study Aims and Research Questions

A brief outline of the evidence provided herein serves as a supportive base for developing the hypotheses of this study. The characterisation of early at-risk mental states has to be considered in the context of several limitations. Thus, the progression or non-progression of symptoms into syndromes in developmental psychopathology depends on a mix of risk and protective factors (as argued by Keshavan et al., 2011).

The commonly investigated cognitive deficits and psychotic symptoms in ARMS subjects are often transitory and may not reflect the stable core features of a developing psychosis. Therefore, this study proposes to include the construct of

attachment as a potential predictor of at-risk mental states. Again, to the best of the author's knowledge, no study has included attachment in predictive models in an ARMS sample. Evidence shows that male gender, younger age, lower level of education, a state of homeless, living alone, being unemployed and fewer years of education are important predictors of developing psychosis (Amminger et al., 2006; Schultze-Lutter et al., 2008, Ruhrmann et al., 2010; Salokangas et al., 2009; Fusar-Poli et al., 2010).

Research has also shown that people with early forms of psychosis cope less well in stressful situations and tend to use maladaptive coping patterns that could possibly influence the severity of psychotic symptoms. These coping patterns are often associated with higher levels of negative symptoms, depression and anxiety (Macdonald. et al., 1998, Lee et al., 2011). The at-risk population also presents with social functioning inability, high distress levels and high psychopathological comorbidity, especially anxiety and/or depression (Yung et al., 2005, Carpenter & Tandon, 2013). Problems in the domains of peer, family, work and school relationships are often present in at-risk subjects and may be indicators of increased susceptibility to psychosis (Ballon et al., 2007).

In terms of social support, Dangelmaier (2006) examined perceived levels of social support in at-risk of psychosis individuals. The results suggested that at-risk individuals feel like they have less perceived social support compared with those in a control group. Similar results were found by Schuldborg (1996) and Erickson et al. (1998), while Salokangas et al. (2009) argued that the decreased levels of social functioning observed in at-risk patients might concern not only objective social competence, but also an individual's experience of interpersonal relationships. These interpersonal relationships may be located at the core of psychotic experiences and present during the at-risk phase. In this regard, this thesis proposes that the attachment system may play an important role in developing psychopathology and in these mal-adaptive patterns of coping, interpersonal problems and perceived social support.

Earlier interpersonal experiences influence future interpersonal functioning and methods for regulating distress via representations about the self and others in relationships (Carr, 2006). If early caregivers are insensitive or unresponsive to distress, the individual either escalates levels of distress, to get their attachment needs met (insecure anxious or ambivalent attachment), or they deactivate their attachment system, which is associated with low levels of affect and the avoidance of close relationships (insecure avoidant attachment) (Shaver & Mikulincer, 2002, cited in Berry et al., 2008).

Thus, the relationship between attachment styles and psychotic symptoms has been investigated recently. The present study proposes to look at attachment as the key feature in the development of psychotic symptoms. Research has shown that insecure attachment organisations predominate in psychosis, specifically dismissive/avoidant attachment representations. Berry et al. (2006), for example, identified that young people with non-clinical psychotic phenomena presented with insecure attachment, and this in turn was associated with interpersonal problems. The same authors, in 2008, investigated associations between attachment and interpersonal functioning, with their results indicating that avoidant attachment is associated with positive symptoms, negative symptoms and paranoia. Attachment ratings were relatively stable over time, although changes in attachment anxiety were positively correlated with changes in symptoms. Predicted associations between high levels of attachment anxiety and avoidance and interpersonal problems were also observed. Similar results were reported by Meins et al. (2007) in a non-clinical sample that found that individuals reporting high levels of paranoia scored higher in attachment anxiety and had less perceived parental care. The findings suggest that attachment style is a meaningful individual difference variable in people with psychosis, and it may be present in the at-risk mental state phase.

The present thesis aims at addressing some of the constructs thought to be associated with the risk of developing psychosis. Specifically, this study will look to young people's attachment styles as a predictor of the at-risk mental state for psychosis. Interpersonal interactions, coping strategies, social support and emotional

distress are taken as constructs that have an indirect effect on the relationship between attachment and the outcome.

In addition, this thesis proposes that young people seeking help from community mental health services will present well-known risk factors that predispose them to be at risk of psychosis, namely male gender, lack of occupation, lower education level, unstable living situation, substance misuse, mental health difficulties and a physical and family history of mental health problems.

It is hypothesised that the attachment representation of this population will fall into the insecure dimension. This dysfunctional pattern of relationships may trigger negative emotional responses, problems in interpersonal interactions, reduced ability to cope with stressful situations and a low perception of social support. Therefore, the internal system may respond by triggering negative beliefs about the self and others that may subsequently escalate into positive psychotic symptoms, putting the young person at risk of developing psychosis.

It is also hypothesised that dysfunctional attachment responses represent an independent variable that predicts the risk of developing psychosis. Interpersonal interactions, coping strategies and perceived social support are taken as inter-correlated independent variables and potential mediators of the relationship between attachment insecurity and the risk of developing psychosis. Emotional distress is also explored further as a covariable of the path between attachment and the risk of psychosis.

The research questions to be addressed in this thesis are:

1. Does attachment insecurity predict the risk of developing psychosis?
2. Do coping strategies, interpersonal difficulties, social support and emotional distress have an indirect effect on the relationship between attachment insecurity regards the risk of developing psychosis?

The specific hypotheses to be tested are:

Hypothesis 1: Attachment insecurity has both a direct effect on the risk of psychosis in help-seeking young people and an indirect effect whereby coping, interpersonal problems and social support mediate this relationship.

Hypothesis 2: Emotional distress has an indirect effect on the impact of attachment insecurity in relation to the risk of psychosis in help-seeking young people.

Section II: Methodology

1. Introduction

This section describes the methodology employed to address the study aims. It comprises the study design, participants and criteria for inclusion and exclusion, sample size calculation, ethical approval and the procedure adopted for the recruitment phase of the study. This section also details the assessment instruments, the research timeline, the pilot study and the outline of the statistical analysis part of the main study.

2. Study Design

This study employed a cross-sectional design. All participants completed a semi-structured interview and a set of self-report questionnaires..

3. Participants

The participants in the present study were young people (aged 16-25 years) who were seeking help for various complaints (reporting psychological distress symptoms and/or social/family/environmental maladjustment) from both mental health and community services in the Edinburgh and the Lothian catchment areas; all were English speakers (***inclusion criterion***). Young people with a psychotic disorder diagnosis, those under antipsychotic medication at the time of the study or that had been before, and young people with a moderate to severe learning disability (unable to fill out the questionnaires) were excluded (***exclusion criteria***).

This study adopted a simple random sampling strategy within mental health and community services. All help-seeking young people that met the inclusion criteria were considered for participation.

This strategy was adopted for two reasons. Firstly, studies have shown that the highest incidence of psychosis is during adolescence and young adulthood

(eg. Kessler et al., 2007). Secondly, this screening process was utilized to understand the prevalence of young people who would meet ARMS criteria upon further assessment, who were attending community mental health support facilities. This was a different approach than the usual screening process utilized in the majority of the studies in the at-risk population (eg. Yung et al., 2005), which usually screen for young people attending early psychosis services. Taking this active approach required the researcher to be in direct contact with young people seeking emotional and psychological help, and to work directly with counselors, social workers as well as other mental health professionals who had contact with these youths. This procedure will be described below (5).

3.1. Sample Size Calculation

An a priori sample size calculation was performed using an online sample size calculator for multiple regression (Sopper, 2004²). A power calculation for five predictors, with an α error probability = 0.05, an anticipated effect size = 0.15 and a statistical power level = 0.8, determined a required sample size of 91 subjects.

4. Ethical Approval

This study was reviewed by and received ethical approval from the NHS South East Scotland Research Ethics Committee (REC No: 11/SS/0027) (Appendix 2), and management approval was received from the NHS Lothian Research & Development (R&D No: 2012/P/PSY/12) (Appendix 1).

² A-priori sample size calculator for multiple regression can be found at <http://danielsoper.com/statcalc3/calc.aspx?id=1>

Any issues that could arise from assessing this particular population were carefully considered. A study information sheet was designed and given to potential participants, explaining the study aims and the procedure (see Appendix 1). All participants were asked to sign a consent form (see Appendix 1).

Potential fatigue arising from completing so many questionnaires was considered as a possible issue, so in order to address this problem the participants were offered the opportunity to take a break from the assessment whenever they felt it was necessary. Also, they were offered the opportunity to reschedule the assessment, if they so desired. If the participant became distraught or distressed by the nature of some invasive items in the questionnaires, they would be offered the chance to seek appropriate advice and support from the researcher's supervisors (consultant clinical psychologists). Participants were informed that they could withdraw from the study at any time.

A preliminary study was piloted across a sample of university students. This pilot study was designed for the researcher to become familiarised with and trained in the administration of the measures. Moreover, the pilot study was conducted to establish how long the measures would take to administer (details in 2.8 of the present section), and it was reviewed by and obtained ethical approval from the Clinical Psychology Ethics Research Panel, School of Health in Social Science, The University of Edinburgh (Appendix 3).

5. Procedure

The researcher contacted by email and telephone mental health and community services supporting young people ranging from 16 to 25 years old in the Edinburgh and Lothian catchment areas. These particular services were selected based on their mission to support young people in difficult situations such as mental health problems, homelessness and/or family abuse and/or neglect.

Meetings were arranged, and the study was presented to different support teams. During the meetings, the researcher presented the study aims and asked for

collaboration from the staff in terms of referring young people according to the study inclusion criteria. The teams that agreed to collaborate were asked to give a study information sheet to potential participants (Appendix 3). The recruitment of participants was sought from nine different mental health and community services.

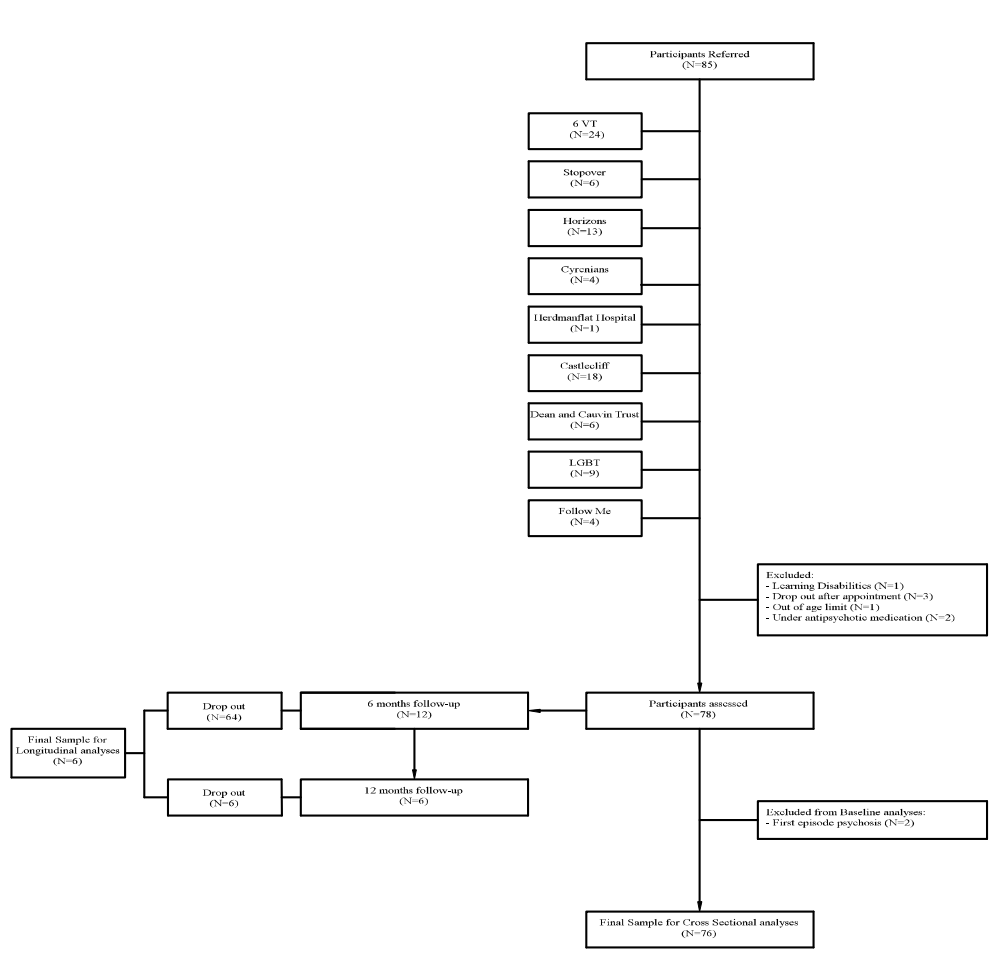
After obtaining permission, the researcher visited potential participants to answer any questions about the research and to obtain informed consent (Appendix 4). All participants were made aware of the confidentially procedures. The date, time and setting for the assessment were arranged between the researcher, the team and the suitable participants. In order to gain additional information about each participant, the researcher was given access to their medical history details, kindly provided either through written records or by the support staff. All participants received financial compensation for their time and attendance.

Recruitment was conducted from January 2012 to September 2013. The author was responsible for the administration of all the assessment instruments, under regular supervision by chartered clinical psychologists.

6. Participant Recruitment Flowchart

A total of 85 young people were referred as potential participants from nine different research sites. After this initial approach, seven participants were excluded. Consequently, 78 participants completed the assessment instruments. Of these, two were excluded, leaving 76 participants in the final analysis. Of the 78 participants assessed, 12 completed the six-month follow-up and six completed the 12-month follow-up. The diagram below clarifies the recruitment flow:

Figure 5: Recruitment of Participants Flowchart



7. Research Sites

As represented schematically above, nine different community and mental health services, located in the city of Edinburgh, agreed to collaborate with the study. Specifically, the recruitment of participants took place in the following youth support mental health services:

7.1. 6VT Youth Café

The 6VT Youth Café is located in the old town of Edinburgh. It attracts young people from a wide mix of backgrounds. The service provides support to young people who find themselves in a vulnerable position, by delivering a holistic personal development opportunity, empowering and motivating positive change in a dynamic environment. An important benefit of the service is the combination of youth and social workers with specialised practitioners. 6VT is a positive social

networking, learning, supporting and developmental service (more information can be found at <http://www.6vt.info/>).

With permission from the staff, the researcher attended 6VT either on Monday or Wednesday evenings. After being informed by the social workers of potential participants (meeting the study entry criteria), the researcher explained the study, gave out the study information sheet and inquired about any questions they might have about the study. If the young person agreed to take part in the study, they were asked to sign the consent form. The setting for the assessment was one office provided by 6VT staff.

7.2. Stopover

Stopover is community service open to individuals aged between 16 and 21 years, who are either homeless or at risk. Young people can stay up to three months at Stopover, and they have social workers' help in relation to finding training, education and employment opportunities (more information can be found at <http://www.homelessuk.org/details.asp?id=HO1002150>).

The researcher attended this service when a member of staff emailed or called, saying they had a young person meeting the criteria and who were interested in taking part in the study. The setting for the assessment was an office at the Stopover premises.

7.3. Horizons – Places for People Scotland Care and Support

Horizons is a supported accommodation and visiting support service on offer to vulnerable young people aged 15 to 25 who have experienced mental health issues, homelessness and/or have a history of care with the social work department. Young people are helped in every aspect of their lives, in aspects such as building and keeping relationships, learning how to manage money, finding and managing a home, building an active social life, getting involved in the local community, getting into education and employment and receiving support relating to current or past

emotional issues (more information can be found at http://www.placesforpeoplecareandsupport.co.uk/find_a_service/young_people/horizons.aspx).

The researcher attended Horizons during the drop-in sessions on Tuesdays and/or Fridays, to present the study and to identify suitable participants. If they agreed to take part, either the assessment was scheduled for another day or it was done at that particular moment. The setting for the assessments was either in an office at Horizons or in an office at the School of Health in Social Science, University of Edinburgh.

7.4. Cyrenians

Cyrenians is a community support service for young people aged 16-30, who are homeless. Their homeless situation is usually the result of a family relationship breakdown, drug or alcohol issues or a mental health problem. The purpose of Cyrenians is to provide a safe and stable community environment for young people to live, learn and develop together, by providing security, structure and boundaries (more information can be found at <http://www.cyrenians.org.uk/>).

The researcher visited this service when a member of staff emailed or called, saying they had a potential participant. Both parties arranged a date and time to meet. The setting was in an office at the Cyrenians Community Farm.

7.5. Community Adult Mental Health Services (Herdmanflat Hospital)

Community Adult Mental Health Services, located at the Herdmanflat Hospital, agreed to collaborate in the study. The unit provides a joint team approach to the management of adults (age 18-65 years old) experiencing mental health problems. The service is accessed through referral from a GP or another health & social care professional (more information about this service can be found at

(http://www.refhelp.scot.nhs.uk/index.php?option=com_content&view=article&id=750:east-lothian-acute-mental-health-services&catid=76&Itemid=1337).

The researcher went to the hospital when a team member emailed or called, saying they had a potential participant. Both parties arranged a date and time to meet. The setting was in one office booked specifically for the study.

7.6. Castlecliff

Castlecliff is a community service for homeless single people and couples with support needs aged 16 and over, offering accommodation for up to three months. Keyworkers offer advice, practical and emotional support around independent living and social skills, education and training. Furthermore, residents are given advice and support around substance misuse and other issues that may have contributed to the individual's homelessness. Residents receive specialised help and are prepared for moving on to suitable longer term accommodation. Follow-up support is available as part of the resettlement process (more information can be found at <http://www.homelessedinburgh.org/details.asp?id=HO1007529>).

The researcher went to Castlecliff when the team manager emailed saying they had a potential participant. Both parties arranged a date and time to meet. The assessment took place in an office at the Castlecliff premises.

7.7. Dean and Cauvin Trust

The Dean and Cauvin Trust supports young people aged between 15 and 21 years (up to 25, if a young parent) as they make the transition from being looked after and accommodated to living independently in the community. At the Dean and Cauvin Trust, young people are provided with supported accommodation and overall support for up to two years after they have moved out of the Trust's supported accommodation. There are three elements to the service, two residential units (Portland Street and Cauvin House) and an aftercare service which

offers a continuum of care for those young people who have resided within the units (more information can be found at <http://www.deanandcauvin.org.uk/>).

The researcher visited the Dean and Cauvin Trust whenever a member of staff emailed or called, saying that they had a potential participant. Both parties arranged a date and time for the assessment. The setting was in an office at the Portland Street premises.

7.8. LGBT Youth Lothian

LGBT Youth Scotland is the largest youth and community-based organisation for lesbian, gay, bisexual and transgender (LGBT) people in Edinburgh. LGBT offers support for young LGBT people, aged 13 to 25, who find themselves in stressful situations. Additionally, the service provides outreach services, including street work and other work in commercial gay venues, online, in local schools and youth groups (more information can be found at <https://www.lgbtyouth.org.uk/edinburgh>). The researcher visited LGBT when a member of staff emailed, saying they had found a participant meeting the study inclusion criteria. Both parties arranged a date and time to meet. The setting for the assessment was in an office at the LGBT premises.

7.9. Follow Me

Follow Me is a Rowan Alba service offering support for homeless people aged between 16 and 25 years who have experienced abuse. The support provided involves practical help in finding accommodation, setting up a new home, managing finances and accessing services. Staff also provide emotional support to deal with the effects of abuse, and they work hard to prevent repeat victimisation. Follow Me is a flexible, needs-based service where the ultimate aim is to enable each person

involved to build their own resources and to live independently (more information can be found at <http://www.rowanalba.org/>).

The researcher visited the Follow Me project when a member of staff emailed or called, saying they had a young person meeting the study entry requirements. Both parties arranged a date and time to meet. The setting was in an office at the Follow Me project premises.

8. Measures

The assessment instruments used in this study are detailed below (please see Appendix 2).

8.1. Demographic Questionnaire

The demographic questionnaire was designed by the researcher and included questions about the participant's age (open question), gender, highest level of education attained, present living situation, present occupation and ethnicity (all closed questions) (see Appendix 3).

8.2. Pre-clinical Semi-structured Interview

A pre-clinical semi-structured interview was designed by the researcher, with the purpose of characterising the participants' substance abuse and health-related problems (personal and family history of both physical and mental health problems), assessing help-seeking behaviour and establishing what triggered their current situation (see Appendix 5).

The variables alcohol and drug misuse were operationalized based on the recommendations of two validated screening tests widely used for alcohol and drug abuse assessment. *Alcohol abuse* was operationalized adapting the Alcohol Use Disorders Identification Test (AUDIT), a tool developed in 1993 by experts of the World Health Organization (WHO) (Saunders et al., 1993) to screen whether an individual's consumption of alcohol has reached a harmful and dangerous level. Scores greater than 8 indicate that the individual has a tendency to abuse alcohol. For the purpose of the present study, the researcher adapted the AUDIT questions and asked participants about their regular alcohol drinking behaviour. Participants were then categorized in a dichotomy variable for the purposes of statistical analyses. *Drug abuse* was operationalized adapting the Drug Abuse Screening Test (DAST-10), a tool developed in 1982 by Harvey A. Skinner and the Centre for Addiction and Mental Health, Toronto, Canada. This 10-item instrument requires individuals to give a "yes" or "no" response from each of 10 questions (each "yes" answer scores one point). The purpose of the DAST is 1) to provide a brief, simple, practical, but valid method for identifying individuals who are abusing psychoactive drugs; and 2) to yield a quantitative index score of the degree of problems related to drug use and misuse. According to the authors' recommendations, in the present study and with adaptations inherent to the semi-structured interview process, a score above three was consider a "yes" case for drug abuse.

8.3. The Comprehensive Assessment of At-Risk Mental States (CAARMS) (Yung et al., 2005).

To determine at-risk mental state/ultra-high-risk status, the comprehensive assessment of at-risk mental states (CAARMS) approach was used. This is a semi-structured interview designed to assess ultra-high-risk criteria for psychosis and a range of other psychopathological conditions thought to indicate the imminent development of a first-episode psychotic disorder (Yung et al., 2005). The CAARMS is designed for repeated use over time, for example monthly to six-monthly. It

consists of seven subscales that include four positive symptom items (unusual thought content, non-bizarre ideas, perceptual abnormalities, and disorganised speech), two cognitive and three emotional disturbance items, three negative symptom items, four behavioural change items, four motor/physical changes items and eight general psychopathology items. The intensity and frequency of symptoms are scored on a 7-point Likert scale (ranging from 0 to 6), and distress caused by the symptom is scored on a 0-100 scale. The social and occupational functioning assessment scale (SOFAS) was used to determine the level of social and occupational functioning on a scale ranging from 0 to 100. A SOFAS score of 50 or less and/or a drop in the SOFAS score of 30% were considered when scoring for UHR status (Rietdijk et al., 2010).

The CAARMS identifies three subgroups of patients with an at-risk mental state for psychosis: **Group 1: Vulnerability Group:** genetic risk (schizotypy or a first-degree relative with a psychotic disorder, both with a recently marked social decline); **Group 2a: Attenuated Psychotic Symptoms:** sub-threshold intensity (unusual thought content and non-bizarre ideas with an intensity ranging from 3-5 and frequency 3-6; perceptual abnormalities and disorganised speech with an intensity ranging from 4-6 and frequency 3-6); **Group 2b: Attenuated Psychotic Symptoms:** sub-threshold frequency (unusual thought content, non-bizarre ideas and disorganised speech with an intensity 6 and frequency 3, and perceptual abnormalities with an intensity ranging from 5-6 and frequency 3); **Group 3: BLIPS** (unusual thought content, non-bizarre ideas and disorganised speech with an intensity 6 and frequency 4-6, and perceptual abnormalities with an intensity ranging from 5-6 and frequency 4-6 with symptoms occurring for less than one week and resolved spontaneously) (Yung et al., 2005; Morrison et al., 2012). The table below clarifies the UHR criteria:

Table 2. CAARMS-defined ultra-high risk of psychosis (Yung et al., 2005)

INTAKE CRITERIA CHECKLIST**Group 1: Vulnerability Group**

This criterion identifies young people at risk of psychosis due to the combination of a trait risk factor and a significant deterioration in mental state and/or functioning

	YES	NO
• Family history of psychosis in first degree relative OR Schizotypal Personality Disorder in identified patient	<input type="checkbox"/>	<input type="checkbox"/>
PLUS		
• 30% drop in SOFAS score from premorbid level, sustained for a month, occurred within past 12 months OR SOFAS score of 50 or less for past 12 months or longer	<input type="checkbox"/>	<input type="checkbox"/>
CRITERION MET FOR GROUP 1 – Vulnerability Group	<input type="checkbox"/>	<input type="checkbox"/>

Group 2: Attenuated Psychosis Group

This criterion identifies young people at risk of psychosis due to a subthreshold psychotic syndrome. That is, they have symptoms which do not reach threshold levels for psychosis due to subthreshold intensity (the symptoms are not severe enough) or they have psychotic symptoms but at a subthreshold frequency (the symptoms do not occur often enough).

	YES	NO
2a) Subthreshold intensity:		
• Global Rating Scale Score of 3-5 on <i>Unusual Thought Content</i> subscale, 3-5 on <i>Non-Bizarre Ideas</i> subscale, 3-4 on <i>Perceptual Abnormalities</i> subscale and/or 4-5 on <i>Disorganised Speech</i> subscales of the CAARMS	<input type="checkbox"/>	<input type="checkbox"/>
PLUS		
• Frequency Scale Score of 3-6 on <i>Unusual Thought Content</i> , <i>Non-Bizarre Ideas</i> , <i>Perceptual Abnormalities</i> and/or Disorganised Speech subscales of the CAARMS for at least a week	<input type="checkbox"/>	<input type="checkbox"/>
2b) Subthreshold frequency:		
• Global Rating Scale Score of 6 on <i>Unusual Thought Content</i> , 6 on <i>Non-Bizarre Ideas</i> , 5-6 on <i>Perceptual Abnormalities</i> and/or 6 on <i>Disorganised Speech</i> subscales of the CAARMS		
PLUS		
• Frequency Scale Score of 3 on <i>Unusual Thought Content</i> , <i>Non-Bizarre Ideas</i> , <i>Perceptual Abnormalities</i> and/or Disorganised Speech subscales of the CAARMS	<input type="checkbox"/>	<input type="checkbox"/>
PLUS (for both categories)		
• Symptoms present in past year	<input type="checkbox"/>	<input type="checkbox"/>
PLUS (for both categories)		
• 30% drop in SOFAS score from premorbid level, sustained for a month, occurred within past 12 months OR SOFAS score of 50 or less for past 12 months or longer	<input type="checkbox"/>	<input type="checkbox"/>
CRITERION MET FOR GROUP 2 – Attenuated Psychosis Group	<input type="checkbox"/>	<input type="checkbox"/>

Group 3: BLIPS Group

This criterion identifies young people at risk of psychosis due to a recent history of frank psychotic symptoms that resolved spontaneously (without antipsychotic medication) within one week.

	YES	NO
• Global Rating Scale Score of 6 on <i>Unusual Thought Content</i> subscale, 6 on <i>Non-Bizarre Ideas</i> , 5 or 6 on <i>Perceptual Abnormalities</i> subscale and/or 6 on <i>Disorganised Speech</i> subscales of the CAARMS	<input type="checkbox"/>	<input type="checkbox"/>
PLUS		
• Frequency Scale Score of 4-6 on <i>Unusual Thought Content</i> , <i>Non-Bizarre Ideas</i> , <i>Perceptual Abnormalities</i> and/or Disorganised Speech subscales	<input type="checkbox"/>	<input type="checkbox"/>
PLUS		
• Each episode of symptoms is present for less than one week and symptoms spontaneously remit on every occasion.	<input type="checkbox"/>	<input type="checkbox"/>
PLUS		
• Symptoms occurred during last year	<input type="checkbox"/>	<input type="checkbox"/>
PLUS		
• 30% drop in SOFAS score from premorbid level, sustained for a month, occurred within past 12 months OR SOFAS score of 50 or less for past 12 months or longer	<input type="checkbox"/>	<input type="checkbox"/>
CRITERION MET FOR GROUP 3 – BLIPS Group	<input type="checkbox"/>	<input type="checkbox"/>

The CAARMS has previously been found to have good to excellent reliability (Yung et al., 2005). In Raballo et al. (2011), for instance, it revealed a high internal Cronbach's $\alpha = 0.85$. In the present thesis, the Cronbach's α for the total 28 items in the CAARMS was $\alpha = .916$, suggesting excellent internal consistency. Cronbach's α s for the items ranged from $\alpha = .909$ to $\alpha = .919$, again indicating excellent internal consistency.

Table 3: CAARMS Internal Consistency

CAARMS Items	Cronbach's Alpha
Unusual Thought Content - Global Rating Scale	.911
Non-Bizarre Ideas - Global Rating Scale	.913
Perceptual Abnormalities - Global Rating Scale	.912
Disorganised Speech - Global Rating Scale	.915
Subjective Cognitive Change - Severity Rating Scale	.911
Subjective Emotional Disturbance - Severity Rating Scale	.911
Observed Blunted Affect - Severity Rating Scale	.917
Observed Inappropriate Affect - Severity Rating Scale	.918
Alogia - Severity Rating Scale	.913
Avolition/Apathy - Severity Rating Scale	.909
Anhedonia - Severity Rating Scale	.909
Social Isolation - Severity Rating Scale	.911
Impaired Role Function - Severity Rating Scale	.911
Disorganised/Odd/Stigmatising Behaviour - Severity Rating Scale	.914
Aggression/Dangerous Behaviour - Severity Rating Scale	.915
Subjective Complaints of Impaired Motor Functioning - Severity Rating Scale	.914
Informant Reported or Observed Changes in Motor Functioning- Severity Rating Scale	.914
Subjective Complaints of Impaired Bodily Sensation - Severity Rating Scale	.914
Subjective Complaints of Impaired Autonomic Functioning - Severity Rating Scale	.912
Mania - Severity Rating Scale	.919
Depression - Severity Rating Scale	.911
Suicidality and Self Harm - Severity Rating Scale	.912
Mood Swings/Liability - Severity Rating Scale	.914
Anxiety - Severity Rating Scale	.911
OCD Symptoms - Severity Rating Scale	.915
Dissociative Symptoms - Severity Rating Scale	.914
Impaired Tolerance to Normal Stress - Severity Rating Scale	.910

A trained clinical psychologist provided specific training for the CAARMS, and the researcher practised the interview for nearly six months, before using it in the pilot study. The researcher was responsible for the administration of the interview to all study participants, and the coding was subject to constant supervision by the researcher's supervisors. After the study recruitment process, the researcher's ability to code the CAARMS was acknowledged, and the researcher provided training to the clinical staff of the Child and Edinburgh Mental Health Services at the Royal Edinburgh Hospital, Midlothian. In addition, the researcher's expertise in the interview resulted in an invitation to lecture about the CAARMS to Doctorate in Clinical Psychology students at the School of Health in Social Science, The University of Edinburgh.

8.4. Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983)

The Hospital Anxiety and Depression scale is a self-report questionnaire designed to provide a simple and reliable tool for use in medical practice, in both clinical and non-clinical populations.

The scale assesses symptoms of anxiety and depression. It has 14 items, with a four-point Likert scale ranging from 0 to 3. Possible scores range from 0 to 21 points for anxiety and 0 to 21 for depression. Using psychiatric diagnosis as a gold standard, ratings of 7 or less are considered to be non-cases, scores of 8-10 are considered borderline cases and 11 or higher implies definite cases. Ceiling or floor effects are limited, as only a small percentage of respondents achieve the minimum or maximum scores (Herrmann, 1996; Snaith, 2003). The original authors (Zigmond & Snaith, 1983) tested the scale for validity, with good results. Severity ratings correlated highly with psychiatric assessments ($r=0.70$ for depression and $r=0.74$ for

anxiety). A subsequent review (Aylard et al., 1987) reported correlations with other depression and anxiety scales ranging from 0.67 to 0.77. In this review the authors analysed 747 papers using the HADS. The Cronbach's alpha coefficients for the subscale "Anxiety" varied from 0.68 to 0.93 (mean 0.83) and for "Depression" from 0.67 to 0.90 (mean 0.82).

In the present thesis, the Cronbach's alpha coefficient for the total scale was $\alpha=0.91$, suggesting good internal consistency. The Cronbach's alpha coefficient for the subscale "Depression" was $\alpha=0.81$ and for "Anxiety" $\alpha=0.84$, again suggesting good internal consistency.

8.5. Adolescent Coping Scale – Specific Short Form (ACS) (Frydenberg & Lewis 1993)

This is a measure of an individual's reliance upon different coping behaviours. It comprises 18 items that assess three forms of common approaches to coping with a specific difficulty: productive, other-focused and non-productive coping.

Individuals rate each coping behaviour on a five-point Likert scale – assessing the frequency of use of each coping behaviour, ranging from 1 "Doesn't apply/Don't do it" to 5 "Used a great deal." The Adolescent Coping Scale has been extensively used in adolescent samples (Frydenberg & Lewis, 1993), although it has not previously been used in a sample of individuals vulnerable to psychosis. The scale has reasonable validity and reliability. The authors used factor analysis to compare the coping strategies, and they found three consistent factors labelled "Reference to others" $\alpha=0.66$, "Non-productive coping" $\alpha=0.69$ and "Solving the problem" $\alpha=0.66$ (Frydenberg & Lewis, 1993).

In this thesis, the Cronbach's alpha coefficient for the overall scale was 0.66, thus indicating an acceptable level of internal consistency. The Cronbach's alpha

coefficients for the subscales were: Non-productive Coping = 0.72; Productive Coping = 0.73; Reference to Others = 0.52. These coefficients are similar to the results found by the original authors.

8.6. Psychosis Attachment Measure (PAM) (Berry et al., 2006; 2007)

The Psychosis Attachment Measure (PAM) has 16 items, with eight items assessing the construct of attachment anxiety and the other eight items assessing the construct of attachment avoidance. Items refer to thoughts, feelings and behaviours in close interpersonal relationships, but they do not refer specifically to romantic relationships. Participants are asked to rate the extent to which each item is characteristic of them, by using a four-point scale ranging from ‘not at all’ to ‘very much’. The measure was designed based on existing attachment self-report measures (Bartholomew and Horowitz, 1991; Brennan et al., 1998). Total scores are calculated for each dimension, by averaging individual item scores, with higher scores reflecting higher levels of anxiety and avoidance (Berry et al., 2006 and Berry et al., 2007).

The PAM has been shown to have good psychometric properties, with Cronbach’s alpha coefficients ranging from 0.70 to 0.86 for “Attachment Anxiety” and from 0.60 to 0.91 for “Attachment Avoidance” (Arbuckle et al., 2008; Blackburn et al., 2010; Kvrjic et al., 2011, 2013; Berry et al., 2006; 2008, 2009; Picken et al., 2010; Owens et al., 2013). The PAM has been validated in German and Spanish (Kvrjic et al., 2012; Sheinbaum et al. 2013, respectively).

In the present study, the Cronbach’s alpha coefficient for the total scale was 0.84. The Cronbach’s alpha coefficients for the subscales were: Attachment Anxiety = 0.87 and Attachment Avoidance = 0.75. These results indicate a good level of internal consistency.

8.7. Inventory of Interpersonal Problems (IIP) – 32 item version (Horowitz et al., 2000)

The IIP-32 (Horowitz, Alden, Wiggins & Pincus, 2000) is a self-report questionnaire that identifies a person's most salient interpersonal difficulties. It has 32 items, with 20 items involving underdeveloped behaviours an individual may "find hard to do" (e.g. "feel close to other people") and 12 items involving overdeveloped behaviours an individual may perceive as "doing too much" (e.g. arguing with other people).

Responses are recorded on a five-point Likert-type scale. Raw scores are obtained by summing the items for each scale according to the instrument's manual. The IIP scale's raw scores are then transformed into *T* scores, with higher scores (defined as a *T* score of 70 or higher) indicating more severe interpersonal problems in the different domains. Each of the IIP-32 subscales has a specific clinical interpretation, with high scores signifying:

- **Domineering/Controlling** - A high score indicates that the person finds it difficult to relax control over other people. People with high scores have described themselves as too controlling or manipulative.
- **Vindictive/Self-Centered** - A high score indicates problems of hostile dominance. The person readily experiences and expresses anger and irritability, is preoccupied with getting revenge and fights too much with other people.
- **Cold/Distant** - A high score indicates minimal feelings of affection for and little connection with other people.
- **Socially Inhibited** - A high score indicates feelings of anxiety, timidity or embarrassment in the presence of other people.
- **Non-assertive** - A high score indicates a severe lack of self-confidence, low self-esteem and severe reluctance to assert oneself over other people.
- **Overly Accommodating** - A high score indicates excessive readiness to yield in a friendly way to the influence of others.

- **Self-Sacrificing** - A high score indicates a strong tendency to empathise with others in need and nurture them, even when doing so requires the person to sacrifice one's own needs for the sake of those who seem to be in need.
- **Intrusive/Needy** - A high score indicates a need to be both friendly and controlling. People with high scores describe themselves as excessively friendly, outgoing and sociable to an extreme degree that others experience as excessively intrusive into their affairs.

In the sample in this study, the internal consistency scores indicated a good level of internal validity, with Cronbach's alpha scores on the following subscales: Domineering/controlling = 0.75, Vindictive/self-centred = 0.84, Cold/distant = 0.81, Socially inhibited = 0.85, Non-assertive = 0.85, Overly accommodating = 0.71, Self-sacrificing = 0.82, Intrusive/needy = 0.75. The Cronbach's alpha score for the overall scale was 0.89, indicating excellent internal consistency.

8.8. Significant Others Scale (SOS) (Power, Champion & Aris, 1988)

The Significant Others Scale (SOS) was developed and validated by Power, Champion and Aris (1988) and is a useful instrument in clinical practice and research. The scale aims at eliciting information regarding the perceived form and function of social support, in actuality and in an ideal sense, for a range of key relationships in an individual's life. The shorter version of the scale is a questionnaire asking the participant to identify up to six significant people in their lives and rate the support each individual provides and what the ideal level would be for the participant. This self-report measure has 10 questions per identified person, with a Likert response scale of 1 "Never" to 7 "Always." The ten questions consist of five items related to emotional support (e.g. trust, talk to frankly and share feelings with, get interest, reassurance and a good feeling about yourself, get physical

comfort, etc.) and five items related to practical support (e.g. get financial and practical help, get suggestions, advice and feedback, get help in an emergency, etc.).

The SOS allows for the calculation of the total social support score and the discrepancy scores (the actual support score minus the ideal support score), which are checked for each individual and then calculated as an overall total.

9. Pilot Study

As stated above, a preliminary study was conducted, in order for the researcher to become familiarised with and trained in the administration of the measures. In addition, the purpose of the pilot study was to establish how long the measures would take to administer. The pilot study population involved students from The University of Edinburgh meeting the same age range as the pre-clinical population (16-25 years old) and who agreed to be take part in and answer the semi-structured interview and the self-reporting questionnaires. Students were approached via an email, in which they were asked to volunteer and to meet the researcher at a time and setting arranged by both parties. Potential participants were informed about the aims of the study and also given a study information sheet (Appendix 3).

All participants were asked to sign a consent form. Assessments were conducted between December 2011 and January 2012, at the School of Health in Social Science, The University of Edinburgh. A total of ten students (N=10), aged from 18 to 25 years old (mean 20.60; std. dev. 2.31 years), agreed to participate in the study. The administration of the assessment instruments took a mean time of 36.50 minutes to complete (std. dev. 11.46; min. 22; max. 62 minutes). Socio-demographic characteristics are presented in Table 4, below.

Table 4: Pilot Study Socio- demographic characteristics (N=10)

	Mean (s.d.)	Min. - Max.
Age (in years)	20.70 (2.31)	18-25
Assessment length of time (in minutes)	36.50 (11.46)	22-62
	Freq.	Perc. (%)
Gender Male	2	20.0
Female	8	80.0
Education Level Completed high school	7	70.0
Some additional training	2	20.0
Completed postgraduate	1	10.0
Living Situation	Freq.	Perc. (%)
Alone	3	30.0
Family	2	20.0
Friends	4	40.0
Other (e.g. non-friends)	1	10.0
Occupation Student full time	10	100.0
Ethnicity White	8	80.0
Asian	2	20.0

10. Timetable

This study was phased and organised as follows: planning, literature review, ethics, pilot study, data collection, data entry, data analysis and drafting work. It accomplished a trimestral-working schedule as presented below:

Table 5: Timetable

YEAR	2010	2011	2012	2013	2014
Planning					
Literature review					
Ethics					
Pilot Study					
Data Collection					
Data Analysis					
Drafting work					

11. Statistical Analysis

Data analysis was conducted using IBM SPSS Statistics version 21.0. In the present study, all data were examined for missing information or entry errors. All univariate statistical analyses were conducted considering the recommendations of Pallant (2010). All variables were examined for normality of distribution using the Shapiro-Wilk Test, according to the recommendations of Razali & Wah (2011). Details of the variables distribution, including the Skewness and Kurtosis are provided in Appendix 4. The scales' internal consistency was analysed with Cronbach's alpha. For the first study aim, univariate analyses were used to describe the demographic characteristics of the sample and the assessment measures. For the second study aim (since most of the variables were non-normally distributed), the Mann Whitney U test, Kruskal-Wallis and Chi square were used to examine differences between the demographic characteristics, as well as interpersonal and clinical characteristics. Spearman's rho was used to investigate correlations between the abovementioned variables.

For the third aim of the study, namely to test the hypothesised relationships between the independent and the dependent variables, and the potential moderating or mediating effects between the independent variables and the outcome proposed in this thesis, it was decided to perform multivariate multiple linear regressions using path analysis with IBM® SPSS® Amos™ 21. Missing data analysis was conducted using the missing at random. Estimations for the model fit were performed with the full maximum likelihood (ML), an iterative procedure that attempts to maximise the likelihood that obtained values of the criterion variable will be predicted correctly. Moreover, maximum likelihood estimation methods are appropriate for non-normally distributed data and small sample sizes. This method was chosen over ordinary least squares (OLS), as the latter minimises the squared deviations between values of the criterion variable and those predicted by the model (Arbuckle, 2012).

The detailed analyses procedure is further clarified, where appropriate, in the Results Section of the present thesis.

Section III: Results

This section, which will present the results of this study by addressing the hypotheses, will be divided into four parts. Part I will focus on the description of the total sample of participants. Part II will present the clinical and interpersonal characteristics of the participants according to the indications provided in the self-report questionnaires, and it will then investigate any differences and associations between the interpersonal and clinical variables and the demographic variables. Moreover, it will present the correlations between the clinical and interpersonal variables. Part IIb will investigate any differences and associations in the presentation of the participants according to demographic, clinical and interpersonal characteristics.

The final segment of Part III will focus on the subgroup of young people with an at-risk mental state for psychosis and will present the differences and relationships between the demographic, clinical and interpersonal characteristics according to the participants' UHR status. Finally, Part IV will address the hypotheses of this study.

Part I: Sample Characterisation

1.1. Demographic Information

A total of 76 individuals took part in the research. Forty-three participants (53.9%) were male and 35 (46.1%) were female. The median age was 19 years (range 16-25), and this variable was not normally distributed ($w=0.922$, $p=0.000$). No significant differences were found between age and gender ($U=650.50$, $p=0.482$). The majority of the participants described themselves as White British ($n=69$, 90.8%), one (1.3%) as Indian, two (2.6%) as Pakistani, two (2.6%) as Black and two (2.6%) as Mixed Black.

1.2. Education

The majority of the sample (n=27, 35.5%) had completed high school, 25 (32.9%) had completed primary or secondary school and 24 (31.6%) had received some additional training (e.g. doing an undergraduate course). This variable was recoded from the original version, in order to meet the assumptions criteria for data analysis.

1.3. Living Situation

With regards to living situation, the majority of the participants were living alone (n= 29, 38.2%), 24 (31.6%) were living with family and 23 (30.3%) were living in hostels or community services accommodation. This variable was recoded from the original version, to meet statistical assumptions for data analysis.

1.4. Occupation

With regards to occupation, the majority of participants were either not working or were studying at the time of study entry (n=50, 65.8%). Ten participants (13.2%) were working and 16 (21.1%) were studying. This variable was recoded from the original version, to meet statistical assumptions for data analysis.

1.5. Substance misuse

The majority of the participants were regular heavy alcohol and drug users (n= 52, 68.4% and n=39, 51, respectively).

1.6. Physical and Mental Health-related Problems

Twenty participants (26.3%) reported suffering from a general physical health issue (e.g. asthma). In terms of mental health problems, 45 participants (59.2%) said they were suffering from a mental health problem (e.g. undiagnosed depression). Most of the participants reported suffering from a mental health problem for a mean time of five years. According to the study inclusion criteria, none of the

participants was under anti-psychotic medication, although some were taking medication for their specific physical health concern or mental health problem.

1.7. Family History of Mental Health Problems

Fifty-one participants (67.1%) referred to having a family member with a mental health problem (e.g. schizophrenia, depression). Of these, 12 participants (23.5%) had a first-degree relative suffering from a psychotic disorder (e.g. mother suffering from schizophrenia).

1.8. Help-Seeking Behaviour

According to the study inclusion criteria, all participants (n=76, 100%) had sought help from a community mental health youth support service during the last 12 months.

The summary of the sample characterisation is presented in Table 6:

Table 6: Sample Characteristics (N=76)

Age (in years) Md (range)		19 (16-25)		
		Freq.	Perc.(%)	Cum.(%)
Gender:	Male	41	53.9	53.9
	Female	35	46.1	100.0
Education Level:	Primary or Secondary school	25	32.9	32.9
	Completed high school	27	35.5	68.4
	Additional training (e.g. undergraduate)	24	31.6	100.0
Living Situation:	Living Alone	29	38.2	38.2
	Living with Family	24	31.6	69.7
	Living with Other (e.g. hostel, community services)	23	30.3	100.0
Occupation:	Working full time	10	13.2	13.2
	Studying	16	21.1	34.3
	Not Working or studying	50	65.8	100.0
Ethnicity:	White	69	90.8	90.8
	Indian	1	1.3	92.1
	Pakistani	2	2.6	94.7
	Black (other)	2	2.6	97.4
	Other (e.g. Mixed Black)	2	2.6	100.0
Regularly drink alcohol?:	No	24	31.6	31.6
	Yes	52	68.4	100.0
Regularly use drugs?	No	37	48.7	48.7
	Yes	39	51.3	100.0
Suffers from Physical Condition:	No	56	73.7	73.7
	Yes	20	26.3	100.0
Suffers from Mental Health Problems:	No	31	40.8	40.8
	Yes	45	59.2	100.0
Family History of Mental Health Problems:	No	25	32.9	32.9
	Yes	51	67.1	100.0

1.9. Gender effects

A Chi-square Test for independence was performed, to examine potential gender associations with the demographic variables. There were no significant associations between gender and any of the demographic variables.

1.10. Summary of Part I

The *supra*-specified sample characteristics describe a group of help-seeking young people, the majority of whom (65.8%) were, at the time of the assessment, without a role and living alone (38.2%). The participants presented high levels of alcohol and drug consumption. A large proportion of the sample suffered from a mental health concern (59.2%) and had a family member with mental health problems (67.1%). Of these, 23.5% had a first-degree relative suffering from a psychotic disorder (e.g. mother suffering from schizophrenia).

Part IIa: Interpersonal and Clinical Characteristics

Part IIa presents the clinical and interpersonal characteristics of the participants according to the indications provided in the self-reporting questionnaires. The descriptive results are presented below, and they are organised according to the assessment instruments.

2.1. Significant Others

The Significant Others Scale (SOS) (Power et al., 1988) was used to assess the participants' social support network. This scale can be rated for up to six individuals in the participant's social network. In this study, the participants were asked to rate only up to three significant relationships. The decision to reduce the number of possible ratings was due to prior ethical issues arising from the high number of assessment instruments across the entire study. Nevertheless, as scale authors recommend, the participants were asked to rate, as their three options of significant relationships, a partner, a close relative and a close friend, respectively. However, when analysing the participants' responses, it was noted that this instruction had not been respected (participants rated, for example, a close relative in the partner field). This is reflected in the subsequent data exploration, where only the total social support networks scores are accounted in the analyses.

The SOS scale has six subscales measuring the levels of social support that the individual feels represent the actual emotional and practical support that is given by an important person, and the ideal level of support that the individual expects from the person. It also measures the discrepancy between the actual emotional and practical support and ideal emotional and practical support. In the present study, all of the subscales were not normally distributed (Appendix 8) as follows: Actual Emotional Support ($w=.957$, $p=.000$); Ideal Emotional Support ($w=.866$, $p=.000$); Discrepancy: Emotional Support ($w=.875$, $p=.000$); Actual Practical Support ($w=.941$, $p=.002$); Ideal Practical Support ($w=.854$, $p=.000$); Discrepancy: Practical

Support ($w=.840, p=.000$) and Total Discrepancy ($w=.866, p=.000$).

Spearman's rho was performed to analyse the inter-correlation coefficients between the SOS dimensions. The results indicate strong correlations between the subscales (ranging from $r=.529$ to $r=.956$, $p<0.05$, $p\leq 0.001$). The median scores for the total network are presented in Table 7.

Table 7: Significant Other Scale: Subscale Scores

Significant Others Scale (SOS)	Total network Median (Range)
Actual emotional support	5.000 (1-7)
Ideal emotional support	6.000 (1-6)
Discrepancy: Emotional Support	.722 (0-4)
Actual Practical support	4.917 (1-7)
Ideal Practical support	6.083 (1-7)
Discrepancy: Practical Support	.791 (0-6)

2.2. Interpersonal Difficulties

The Inventory of Interpersonal Problems (IIP-32) was used to assess possible interpersonal problems experienced by help-seeking young people. As described previously, the scale has eight subscales and an overall total score. The Shapiro-Wilk test was performed to assess the normality of distribution. All the subscales were not normally distributed, excepting of the IIP-32 total score that was normally distributed. (Domineering/Controlling ($w=.908$, $p=.000$); Vindictive/Self-centered ($w=.896, p=.000$); Cold/Distant ($w=.944, p=.002$); Socially Avoidant ($w=.938, p=.001$); Non-assertive ($w=.948$, $p=.004$); Overly Accommodating ($w=.951, p=.005$); Self-Sacrificing ($w=.932$, $p=.001$); Intrusive/Needy ($w=.929, p=.000$); IIP 32 Total Score ($w=.988, p=.623$).

Spearman's rho was performed to analyse the inter-correlation between the scale dimensions. The results indicate a wide range of correlation coefficients

(ranging from $\rho=.227$ to $\rho=.787$, $p<0.05$, $p\leq 0.001$) between the subscales. The median and mean scores for the subscales and total scale are presented in Table 8:

Table 8: Mean/Median for the IIP-32 total and subscales scores

IIP 32 subscales and total score	Mean/Median	SD/Range
Domineering/Controlling	Median = 4	0-14
Vindictive/Self-centered	Median = 4	0-14
Cold/Distant	Median = 6	0-16
Socially Avoidant	Median = 5	0-16
Non-assertive	Median = 6	0-16
Overly Accommodating	Median = 7	0-14
Self-Sacrificing	Median = 8	0-16
Intrusive/Needy	Median = 4.5	0-14
IIP Total Score	Mean = 47.908	23.649

The IIP subscales and total score raw scores were transformed into *T* scores according to the authors' manual (Horowitz et al., 2000): Domineering/Controlling ($T=62$), Vindictive/Self-centered ($T=60$), Cold/Distant ($T=59$), Socially Avoidant ($T=58$), Non-assertive ($T=56$), Overly Accommodating ($T=59$), Self-Sacrificing ($T=61$), Intrusive/Needy ($T=59$), Total ($T=62$). In the present study, all the subscales and the Total IIP score *T*-scores ranged from 56-62 and did not reach the cut-off point of 70 for consideration of significant problematic interpersonal disturbances (although these results are slightly above the normal range of 40-60). As mentioned earlier, in Section II, the IIP subscales reflect behaviours that people tend to adopt when interacting with others, specifically:

- **Domineering/Controlling** - A high score indicates that the person finds it difficult to relax control over other people. People with high scores have described themselves as too controlling or manipulative.
- **Vindictive/Self-Centered** - A high score indicates problems of hostile dominance. The person readily experiences and expresses anger and irritability, is preoccupied with getting revenge and fights too much with other people.

- **Cold/Distant** - A high score indicates minimal feelings of affection for and little connection with other people.
- **Socially Inhibited** - A high score indicates feelings of anxiety, timidity or embarrassment in the presence of other people.
- **Non-assertive** - A high score indicates a severe lack of self-confidence, low self-esteem and severe reluctance to assert oneself over other people.
- **Overly Accommodating** - A high score indicates excessive readiness to yield in a friendly way to the influence of others.
- **Self-Sacrificing** - A high score indicates a strong tendency to empathise with others in need and nurture them, even when doing so requires the person to sacrifice one's own needs for the sake of those who seem to be in need.
- **Intrusive/Needy** - A high score indicates a need to be both friendly and controlling. People with high scores describe themselves as excessively friendly, outgoing and sociable to an extreme degree that other experience as excessively intrusive into their affairs.

In this study, the subscales “Self-Sacrificing” and “Overly Accommodating” were where the participants scored higher. Both of these subscales are related to an excessive readiness to yield in a friendly way to the influence of others. Moreover, they relate to a strong tendency to empathise with others in need and nurture them, even when doing so requires the person to sacrifice one's own needs for the sake of those who seem to be in need.

2.3. Coping

To assess the coping strategies utilised by the sample, the Adolescent Coping Scale – Specific Short Form (ACS-SF) (Frydenberg & Lewis 1993) – was used. All the subscales were normally distributed: Non-Productive Coping ($w=0.983$, $p=.494$); Solving the Problem ($w=0.977$, $p=.243$); Reference to Others ($w=.975$, $p=.142$) (Appendix 8).

A Pearson's correlation revealed a positive moderate correlation between the "Solving the Problem" and "Reference to Others" subscales ($r=.290$, $n=68$, $p=.017$, $p<.05$), and a negative moderate correlation between "Non-Productive Coping" and "Solving the Problem" ($r=-.250$, $n=64$, $p=.047$, $p<.05$). The mean scores for the subscales are presented below:

Table 9: Mean/SD for the ACS subscales

Adolescent Coping Scale – Specific Short Form (ACS)	Mean	SD
Non-productive Coping	3.15	0.841
Solving the Problem	3.20	0.781
Reference to Others	2.50	0.803

In this study, young people scored higher in the "Solving the Problem" dimension, although almost the same mean was found for the "Non-Productive" subscale.

2.4. Emotional Distress

To assess the participants' emotional distress the Hospital Anxiety and Depression Scale (HADS) was used. The subscale "Anxiety" was normally distributed ($w=0.969$, $p=0.062$) and the "Depression" subscale was not normally distributed ($w=0.955$, $p=0.011$) (Appendix 8). The mean score for "Anxiety" was 7.947 (s.d.= 4.496) and the median for "Depression" was 8 (range 0-20). The results indicate "borderline cases" for "Anxiety" and "Depression" within the sample. Spearman's rho indicated a strong positive correlation between the subscales ($\rho = .840$, $n=72$, $p=.000$, $p<.001$).

Table 10: Mean/Median scores for the HADS subscales

HADS subscales	Mean/Median	SD/Range
HADS – Anxiety	Mean=7.947	4.496
HADS – Depression	Median=8	0-20

2.5. Attachment Styles

To assess the participants' attachment styles the Psychosis Attachment Measure (PAM) was used. The subscale "Attachment Anxiety" was not normally distributed ($w=0.954$, $p=0.008$) and the subscale "Attachment Avoidance" was found to be normally distributed ($w=0.976$, $p=0.178$). The median score for the "Attachment Anxiety" subscale was 1.250 (range 0-2.63) and the mean score for the "Attachment Avoidance" subscale was 1.757 (s.d. = 0.614). Results revealed that "Attachment Avoidance" had a higher score than "Attachment Anxiety," indicating that the participants had a higher tendency to distance themselves emotionally from others rather than adopt a very close bond, due to a fear of potential loss.

Spearman's rho correlation indicated a weak correlation between "Attachment Anxiety" and "Attachment Avoidance" ($r=.263$, $p=.024$). The mean/median scores of the PAM subscales are presented in Table 11:

Table 11: Mean/Median for the PAM subscales

Psychosis Attachment Measure (PAM)	Mean/Median	SD/Range
Attachment Anxiety	Median= 1.250	0-2.63
Attachment Avoidance	Mean= 1.757	0.614

2.7. Summary of Part IIa

The data analyses above represent a sample of help-seeking young people with overall good levels of perceived actual and ideal emotional and practical support and low levels of discrepancy between both emotional and practical support. With regards to interpersonal difficulties, this sample, although below a significant value, tended to have moderate scores of problems in dealing with others. In this study, non-productive coping scores and solving the problem were equalised. The results revealed high scores of both Attachment Anxiety and Attachment Avoidance in the sample, with participants scoring above the mean in the Attachment Avoidance dimension. With regards to anxiety and depression, young people scored relatively highly in both subscales, which reveals moderately high levels of emotional distress within this sample.

Part IIb: Exploratory Analysis of the Differences and Correlations between the Demographic, Clinical and Interpersonal variables

3.1.1. Effects of Demographic variables in the SOS Subscales

A Chi-Square test of independence, a Mann-Whitney U Test and a Kruskal-Wallis were used to examine potentially significant differences between the demographic variables and the SOS subscales. There were no significant effects from *gender, education level, living situation, alcohol misuse or family history of mental health problems*.

There were significant differences between occupation and the levels of perceived social support, with young people *who were working* reporting higher scores for “Actual Practical Support” (Md =49.0), compared to young people studying and young people not working or studying (χ^2 (2, n=76)=6.911, $p=.032$). Young people who were *not working or studying* reported significantly higher scores than workers and students for “Discrepancy in Emotional Support” and “Discrepancy in Practical Support” (χ^2 (2, n=76)=10.477, $p=.005$) and (χ^2 (2, n=76)=7.880, $p=.019$), respectively.

There were also significant differences in drugs use, with *drug users* revealing significantly higher scores for “Actual Emotional Support” (U=523.000, $z=-2.066$, $p=.039$); “Actual Practical Support” (U=519.00, $z=-2.109$, $p=.035$) and “Discrepancy in Practical Support” (U=484.000, $z=-2.505$, $p=.012$) than non-users.

Young people who referred to having a *physical concern* revealed significantly higher scores for “Actual Emotional Support” (U=507.000, $z=-.626$, $p=.531$); “Ideal Emotional Support” (U=397.000, $z=-1.928$, $p=.054$) and “Ideal Practical Support” (U=362.500, $z=-2.348$, $p=.019$).

Participants who *reported having a mental problem* revealed significantly higher scores in “Actual Emotional Support” (U=473.500, $z=-2.372$, $p=.018$); “Discrepancy Emotional Support” (U=421.000, $z=-2.948$) and “Discrepancy

Practical Support” ($U=451.000$, $z=-2.644$, $p=.008$) than young people *without a mental health problem*.

2.2.1. Effects of Demographic Variables in the IIP 32 Subscales and Total Score

A Chi-Square test of independence, a *T*-test and a Mann-Whitney U Test were used to examine potentially significant differences between the demographic variables and the IIP- 32.

In this study, there were no significant effects from *gender*, *education level*, *alcohol misuse* or *family history of mental health problems*, or from the IIP subscales and total score. However, there were significant effects from *living situation* and the “Socially Avoidant” subscale, with young people living alone reporting significantly higher scores ($Md= 45.93$) than young people living with family or with others ($\chi^2(2,n=76)=6.389$, $p=.041$).

Young people *consuming drugs* reported significantly higher scores in the “Vindictive/Self-centered” ($U=505.500$, $z= -2.261$, $p=.024$); “Socially Avoidant” ($U=531.500$, $z= -1.981$, $p=.048$); and IIP Total ($t(74) = -2.269$, $p=.026$), than non-consumers.

Young people with a *physical concern* revealed significantly higher scores in the domain “Self-Sacrificing” ($U=318.000$, $z=-2.869$, $p=.004$) than young people without a physical concern.

Young people who reported having a *mental health problem* had significantly higher scores than young people without a mental health problem in “Vindictive/Self-centered” ($U=499.000$, $z=-2.113$, $p=.035$); “Cold/Distant” ($U=396.500$, $z=-3.199$, $p=.001$); “Socially Avoidant” ($U=453.500$, $z=-2.588$, $p=.010$); “Non-Assertive” ($U=442.000$, $z=-2.172$, $p=.007$); “Overly Accommodating” ($U=435.000$, $z=-2.784$, $p=.005$) and IIP Total Score ($t(74)=-3.072$, $p=.003$).

2.2.2. Correlations between Interpersonal Problems and Social Support

A Spearman's rho test was performed to analyse possible relationships between "Interpersonal Problems" and "Social Support." The results are presented in Table 12. All the significant interpersonal problems and social support subscales were positively correlated with "Non-productive Coping." The "Socially Avoidant" subscale and the IIP Total score were negatively correlated with "Solving the Problem." The "Intrusive/Needy" subscale was the only IIP-32 subscale correlating with "Reference to Others."

Table 12: Spearman's rank correlation coefficients for the IIP and SOS

Significant Others Subscales	Cold/Distant	Socially Avoidant	Non-assertive	Overly Accommodating	IIP Total Score
Actual Emotional Support	-.242*	n.s.	n.s.	n.s.	-.228*
Discrepancy: Emotional Support	.440**	.367**	.384**	.363**	.439**
Discrepancy: Practical Support	.286*	.246*	.259*	.272*	.329**

*significant at $p < 0.05$, ** $p \leq 0.001$, n.s. = non-significant

2.4.1. Effects of Demographic Variables in the ACS Subscales

A Chi-Square test of independence, an ANOVA and a *T*-test were used to examine potentially significant differences between the demographic variables and the ACS subscales. There were no significant effects across coping styles in respect to gender, having a physical concern, education level and family history of mental health problems.

There were differences between coping strategies and occupation, with young people who were working ($n=10$, mean 3.66) using more “Solving the Problem” strategies than young people who were studying ($n=11$, mean=3.60) or not working or studying ($n=48$, mean=3.01) ($F(2,66)=5.129$, $p=.009$). Young people who were not working or studying ($n=45$, mean=3.38) tended to use more “Non-productive Coping” strategies than young people who were either working ($n=9$, mean= 2.51) or studying ($n=15$, mean=2.93) ($F(2, 66)=2.487$, $p=.27$).

With regards to alcohol misuse, non-users tended to use more “Solving the Problem” strategies ($n=20$, mean= 2.83) than alcohol users ($n=49$, mean=3.36) ($t(67)=-2.63$, $p=.011$). Young people who regularly used drugs tended to utilise more ($n=34$, mean=3.51) “Non-productive Coping” strategies in comparison to non-users ($n=35$, mean=2.71) ($t(74)=-4.418$, $p=.000$). Participants that reported having a mental health problem ($n=41$, mean = 3.49) tended to adopt “Non-Productive Coping” strategies in comparison to young people who did not have a mental health problem ($n=28$, mean= 2.54). The same trend was observed in relation to the use of “Solving the Problem” strategies, with young people who did not have a mental health problem ($n=26$, mean = 3.44) in comparison to young people that have a mental health concern ($n=43$, mean = 3.06) ($t(67)=-3.463$, $p=.001$).

2.4.2. Correlations between Coping, Interpersonal Problems and Social Support

A Spearman's rho test was performed to analyse possible relationships between "Coping Style," "Interpersonal Problems" and "Social Support." The results are presented in Table 10. All the significant interpersonal problems and social support subscales positively correlated with "Non-productive Coping." The "Socially Avoidant" subscale and the IIP Total score were negatively corrected with "Solving the Problem." The "Intrusive/Needy" subscale was the only one correlating with "Reference to Others."

Table 13: Spearman's rank correlation coefficients for Coping and IIP and SOS

IIP 32 subscales and total score and SOS subscales	Non-productive Coping	Solving the Problem	Reference to Others
IIP Domineering/Controlling	.458**	n.s.	n.s.
IIP Vindictive/Self-centered	.331**	n.s.	n.s.
IIP Cold/Distant	.310**	n.s.	n.s.
IIP Socially Avoidant	.403**	-.361**	n.s.
IIP Non-assertive	.297*	n.s.	n.s.
IIP Overly Accommodating	.495**	n.s.	n.s.
IIP Self-Sacrificing	.351**	n.s.	n.s.
IIP Intrusive/Needy	.286*	n.s.	.404**
IIP Total Score	.515**	-.243*	n.s.
Discrepancy: Emotional Support	.251*	n.s.	n.s.
Discrepancy: Practical Support	.282*	n.s.	n.s.

*significant at $p < 0.05$, ** $p \leq 0.001$, n.s. = non-significant

2.4.1. Effects of Demographic Variables in the HADS Subscales

A Chi-Square test of independence, an ANOVA and a *T*-test were used to examine potentially significant differences between the demographic variables and the HADS subscales “Anxiety” and “Depression.” There were no significant differences between “Anxiety” and “Depression” levels and *gender*, *education level*, *having a physical concern* and *family history of mental health problems*.

Participants who were living alone ($n=29$, $\text{mean}=45.78$) reported significantly higher levels of depression than participants living with family ($n=23$, $\text{mean}=29.85$) or living with others ($n=21$, $\text{mean}=32.71$) ($\chi^2(2,76)=8.48$, $p=.014$). The same tendency was observed in anxiety levels, with young people living alone ($n=28$, $\text{mean}=10.04$), reporting significantly higher levels of anxiety than young people living with family ($n=24$, $\text{mean}=6.29$) or with others ($n=23$, $\text{mean}=7.13$) ($F(2, 72)=5.661$, $p=.005$).

Participants who were not working or studying differed significantly in “Anxiety” levels from young people who were either working or studying. Participants who were not working or studying ($n=49$, $\text{mean}=9.30$) reported higher levels of “Anxiety” than young people working ($n=10$, $\text{mean}=4.600$) or studying ($n=16$, $\text{mean}=5.87$) ($F(2, 72)=7.974$, $p=.001$). The same trend was observed in relation to “Depression” levels ($\chi^2(2,76)=17.82$, $p=.000$).

Young people with regular drugs consumption reported higher levels than non-consumers in “Anxiety” levels ($t(73)=-2.2215$, $p=.030$). “Depression” levels also differed in relation to drug consumption, with regular consumers reporting higher levels of “Depression” than non-consumers ($U(467.000)$, $z=-2.203$, $p=.028$).

Significantly higher levels of “Anxiety” were also significantly different between young people with a mental health problem ($n=45$, $\text{mean}=10.33$) and young people without a mental health problem ($n=30$, $\text{mean}=4.36$) ($t(73)=-7.397$, $p=.000$). “Depression” levels also differed significantly between young people with ($n=43$,

mean = 45.98) and without a mental health problem (n=30, mean=24.13) (U=250.000, z=-4.342, p=.000).

2.4.2. Correlations between Emotional Distress, Coping, Interpersonal Problems and Social Support

Spearman's rho correlations were used to explore relationships between the "Anxiety," "Depression," "Coping," "Interpersonal Problems" and "Perceived Social Support" subscales. These are detailed in Table 11. The results indicate a strong correlation between "Anxiety" and "Non-productive Coping" (rho= .600, n=68, p=.000, $p < .05$) and a negative medium correlation between the "Anxiety" and "Solving the Problem" subscales (rho = -.408, n=68, p=.000, $p \leq .001$). The subscales "Depression" and "Non-productive Coping" were strongly correlated (rho= .653, n=66, p=.000, $p \leq .001$), and the "Depression" and "Solving the Problem" subscales were negatively medium correlated (rho=-.302, n=67, p=.013, $p < .05$).

In relation to interpersonal problems, "Anxiety" and "Depression" were positively correlated with the dimensions "Domineering/Controlling," "Vindictive/Self-centered," "Cold/Distant," "Socially Avoidant," "Non-assertive," "Overly Accommodating" and the total score. "Anxiety" was also positively correlated with the dimension "Self-Sacrificing." With regards to perceived social support, "Anxiety" and "Depression" were negatively correlated with "Actual Emotional Support" and "Actual Practical Support," and they were positively correlated with the "Discrepancy in Emotional Support" and "Discrepancy in Practical Support" subscales.

Table 14: Spearman's rank correlation coefficients for the HADS subscales and ACS, IIP32 and SOS

Interpersonal/Clinical variables	Anxiety	Depression
ACS Non-productive Coping	.600*	.653**
ACS Solving the Problem	-.408**	-.302*
IIP Domineering/Controlling	.236*	.270*
IIP Vindictive/Self-centered	.278*	.272*
IIP Cold/Distant	.465**	.400**
IIP Socially Avoidant	.569**	.554**
IIP Non-assertive	.562**	.537**
IIP Overly Accommodating	.574**	.558**
IIP Self-Sacrificing	.287*	n.s.
IIP Total Score	.603**	.568**
Actual emotional support	-.288*	-.320**
Discrepancy: Emotional Support	.483**	.471**
Actual Practical support	-.302**	-.368**
Discrepancy: Practical Support	.379**	.410**

*significant at $p < 0.05$, ** $p \leq 0.001$, n.s. non-significant

2.5.1. Effects of Demographic Variables in the PAM Subscales

A Chi-Square test of independence, a one-way ANOVA and a Mann-Whitney U Test were used to examine potentially significant differences between the demographic variables and the “Attachment Anxiety” and “Attachment Avoidance” subscales of the PAM. There were no significant differences between the attachment subscales and gender, alcohol or drugs misuse and family history of mental health problems.

There were moderately significant differences in “Education Level” and “Attachment Avoidance,” with young people who only completed primary or secondary school ($n=24$, mean=2.00) reporting higher levels of “Attachment Avoidance” than young people who had completed high school ($n=27$, mean= 1.59) or received some additional training ($n=23$, mean= 1.68) ($F(2, 71)= 3.22$, $p=.46$).

Young people who were *living alone* reported significantly higher levels (n=29, mean=2.10) of “Attachment Avoidance” than young people living with family (n=22, mean=1.55) or living with others (n= 23, mean=1.63) ($F(2, 71)=4.711, p=.012$).

There were significant differences in “Occupation,” with young people not working or studying (n=50, mean 43.2) reporting higher levels of “Attachment Anxiety” than young people either working (n=10, 24.25) or studying (n=15, mean=29.83) ($\chi^2(2,76)=8.969, p=.011$).

Participants with a mental health problem reported significantly higher levels of “Attachment Anxiety” (n=45, mean=45.58) than participants without a mental health concern (n=30, mean=26.63) ($U=334.000, z=-3.695, p=.000$).

2.5.2. Correlations between Attachment Dimensions, Emotional Distress, Coping, Interpersonal Problems and Social Support.

A Spearman’s rho was performed to analyse possible relationships between “Attachment Dimensions” and “Emotional Distress,” “Coping,” “Interpersonal Problems” and “Social Support.” The results indicate a moderately strong correlation between “Anxiety” and “Attachment Anxiety” ($\rho=.659, p=.000$) and a medium correlation between “Anxiety” and “Attachment Avoidance” ($\rho=.474, p=.000$).

“Depression” and “Attachment Anxiety” were strongly correlated ($\rho=.563, p=.000$) and “Depression” and “Attachment Avoidance” were medium correlated ($\rho=.421, p=.000$). With regards to “Coping,” “Attachment Anxiety” and “Avoidance” were negatively correlated with “Solving the Problem” and positively correlated with “Non-Productive Coping.” “Attachment Avoidance” was negatively correlated with “Reference to Others.” “Attachment Anxiety” was positively correlated with the interpersonal problems domains “Domineering/Controlling,” “Cold/Distant,” “Socially Avoidant,” “Non-assertive,” “Overly Accommodating,” “Self-Sacrificing, Intrusive/Needy” and the total score. “Attachment Avoidance” was

negatively correlated with the domain “Intrusive/Needy”. With regards to “Social Support,” “Attachment Anxiety” was positively correlated with the subscales “Discrepancy in Emotional Support” and “Discrepancy in Practical Support.” “Attachment Avoidance” was negatively correlated with “Actual Practical Support.”

Table 15: Spearman's rank correlation coefficients between Attachments dimensions and clinical and interpersonal variables

	PAM Anxiety <i>(rho, sig.)</i>	PAM Avoidance <i>(rho, sig.)</i>
HAD Anxiety	.659** (.000)	.474** (.000)
HAD Depression	.563** (.000)	.421** (.000)
ACS Solving the Problem	-.406** (.001)	-.273* (.023)
ACS Non-productive Coping	.584** (.000)	.278* (.022)
ACS Reference to Others	n.s.	-.355** (.002)
IIP Domineering/Controlling	.314* (.006)	n.s.
IIP Cold/Distant	.396** (.000)	.318** (.006)
IIP Socially Avoidant	.428** (.000)	n.s.
IIP Non-assertive	.454** (.000)	n.s.
IIP Overly Accommodating	.546** (.000)	n.s.
IIP Self-Sacrificing	.405** (.000)	n.s.
IIP Intrusive/Needy	.402 ** (.000)	-.274* (.18)
IIP Total Score	.569** (.000)	n.s.
SOS Actual Practical Support	n.s.	-.277* (.017)
SOS Discrepancy Emotional Support	.411** (.000)	n.s.
SOS Discrepancy Practical Support	.396** (.000)	n.s.

*significant at $p < 0.05$, ** $p \leq 0.001$, n.s. non-significant

PART III: Ultra-High-Risk Status and Demographic, Interpersonal and Clinical Characteristics

2.5. Risk of Psychosis:

To investigate the risk of psychosis, the Comprehensive Assessment of At-risk Mental States (CAARMS) (Yung et al., 2006) was used. Of the total sample (N=76), 30 (39.5%) participants were considered to be non-at risk (UHR-) and 46 (60.5%) participants were considered to be at-risk mental state for psychosis (UHR+). The UHR+ and UHR- acronyms will be used continuously during the following sections to represent those groups meeting and not meeting the CAARMS Ultra-High Risk criteria, respectively. The demographic characteristics of the group with an at-risk mental state for psychosis are presented below in Table 16.

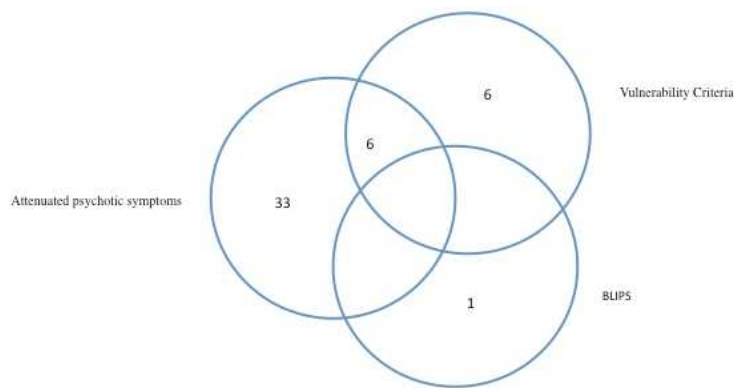
Table 16: Sample Characteristics of young people with an ARMS (N=46)

Age (in years) Md (range)		19 (16-25)		
		Freq.	Perc.(%)	Cum.(%)
Gender:	Male	23	50.0	50.0
	Female	23	50.0	100.0
Education Level:	Primary or Secondary	14	30.4	30.4
	Completed high school	16	34.8	65.2
	Additional training (e.g. undergraduate)	16	34.8	100.0
Living Situation:	Living Alone	21	45.7	45.7
	Living with Family	11	23.9	69.6
	Living with Other (e.g. hostel, community)	14	30.4	100.0
Occupation:	Working full time	4	8.7	8.7
	Studying	7	15.2	23.9
	Not Working or studying	35	76.1	100.0
Ethnicity:	White	43	93.5	93.5
	Indian	1	2.2	95.7
	Pakistani	1	2.2	97.8
	Black (other)	0	0	97.8
	Other (e.g. Mixed Black)	1	2.2	100.0
Regularly drink alcohol?:	No	15	32.6	32.6
	Yes	31	67.4	100.0
Regularly use drugs?:	No	17	37.0	37.0
	Yes	29	63.0	100.0
Suffers from Physical Condition:	No	32	69.6	69.6
	Yes	14	26.3	100.0
Suffers from Mental Health Problems:	No	11	23.9	23.9
	Yes	35	76.1	100.0
Family History of Mental Health Problems:	No	13	28.3	28.3
	Yes	33	71.7	100.0

The Social and Occupational Functioning Assessment Scale (SOFAS) was used to assess the drop in global functioning of the participants (mean, 56.16, s.d.=16.88, n=76). The SOFAS mean score for the UHR+ group was (50.13, s.d. 14.131, n=46) and for the UHR- it was 64.55 (s.d.16.411, n=30). The Mann Whitney U-test revealed that the difference was significant between the two groups, with the UHR+ group presenting a higher drop in global functioning than the UHR- group ($U=349.000$, $z=-3.498$, $p=.000$).

In terms of the sample distribution according to their ultra-high-risk status, most subjects met the “Attenuated psychotic symptoms” criteria (n=40, 52.6%), 12 (15.8%) met the “Vulnerability criteria” and one (1.3%) met the “BLIPS” criteria. There was a considerable degree of overlap between the groups, with seven participants belonging to more than one ultra-high-risk group. The proportions filling the various criteria are similar to the results reported, for example, by Yung et al. (2004) and Raballo et al. (2011). The distribution of the subjects between the three intake groups is illustrated below:

Figure 6: Number of UHR+ participants meeting each intake criteria



2.6.1. Descriptive Statistics for the CAARMS Severity Scores

The CAARMS items and subscales were explored further in terms of their severity scores for the whole sample (n=76) and in the subsamples UHR+ (n=46) and UHR- (n=30). The results are presented in Table 17.

Table 17: CAARMS Severity Scores for Total Sample, UHR+ and UHR-

Comprehensive Assessment of At-Risk Mental States (CAARMS) items	All subjects (n=76)	UHR+ (n=46)	UHR- (n=30)
	Median (Range)	Median (Range)	Median (Range)
Unusual Thought Content	2(5)	3(5)	0(2)
Non-Bizarre Ideas	2(5)	2(5)	0(2)
Perceptual Abnormalities	3(6)	3(6)	2(3)
Disorganised Speech	2(5)	2(5)	0(3)
Subjective Cognitive Change	2(6)	3(6)	1.5(4)
Observed Cognitive Change	0(5)	3(5)	0(4)
Subjective Emotional Disturbance	2(5)	0(5)	0(3)
Observed Blunted Affect	0(5)	0(5)	0(3)
Observed Inappropriate Affect	0(5)	0(5)	0(5)
Alogia	2(5)	2(5)	0(5)
Avolition/Apathy	3(6)	4(6)	2(5)
Anhedonia	3(6)	4(6)	0(5)
Social Isolation	3(6)	4(6)	0(6)
Impaired Role Function	4.5(6)	5(6)	2(6)
Disorganising/Odd/Stigmatizing Behaviour	0(6)	0(6)	0(5)
Aggression/Dangerous Behaviour	2(6)	3.5(6)	0(5)
Subjective Complaints of Impaired Motor Functioning	0(5)	0(5)	0(3)
Informant Reported or Observed Changes in Motor Functioning	0(4)	0(4)	0(2)
Subjective Complaints of Impaired Bodily Sensation	0(5)	0(5)	0(3)
Subjective Complaints of Impaired Autonomic Functioning	0(5)	2(5)	0(3)
Mania	0(5)	0(5)	0(3)
Depression	4(6)	4(6)	2(5)
Suicidality and Self Harm	2(6)	3(6)	0(6)
Mood Swings/Liability	0(6)	0(6)	0(6)

Anxiety	1(6)	3(6)	0(5)
OCD Symptoms	0(6)	0(6)	0(3)
Dissociative Symptoms	0(5)	0(5)	0(4)
Impaired Tolerance to Normal Stress	2(6)	3(6)	0(6)

CAARMS Severity Scores: 0= Absent, 1= Questionable, 2= Mild, 3= Moderate, 4= Moderately Severe, 5= Severe, 6= Extreme (i.e. psychotic intensity). (Source: Raballo et al., 2011)

The results show that the help-seeking young people in this study (N=76) present mild to moderate levels of positive symptoms, impaired role functioning and depression. As expected, young people at-risk mental state for psychosis (UHR+) presented higher levels in all the CAARMS subscales than young people without an at-risk mental state (UHR-).

2.6.2. CAARMS Ultra-High Risk Criteria: Severity and Distress Scores for the Total Sample and the UHR+ and UHR- Groups

To build the dependent variable “Risk of Psychosis” (outcome) eight subscales of the CAARMS assessing the UHR status were used. The scores used were the “Severity” and “Distress” levels. As mentioned elsewhere, the “Severity” scores were calculated as per the literature, i.e. the product between the “Global Rating” and “Frequency” scores of the CAARMS. These were used as measurement-dependent variables in model building for further hypotheses testing (Chapter IV). The scores are presented below in Table 18.

Table 18: CAARMS Ultra-High-Risk Criteria: Severity and Distress Scores for the Total sample and the UHR+ and UHR- groups

CAARMS Ultra High-Risk Criteria subscales	All subjects	UHR + (n=46)	UHR- (n=30)
	Median (Range)	Median (Range)	Median (Range)
Unusual Thought Content Severity	2.00(5)	3.00(5)	.00(2)
Unusual Thought Content Distress	30.00(100)	60.00(100)	.00(60)
Non-bizarre Ideas Severity	2.00(5)	2.00(5)	.00(2)
Non-bizarre Ideas Distress	20.00(100)	60.00(100)	.00(50)
Perceptual Abnormalities Severity	3.00(6)	3.00(6)	2.00(3)
Perceptual Abnormalities Distress	40.00(100)	65.00(100)	.00(100)
Disorganised Speech Severity	20.00(5)	2.00(5)	.00(3)
Disorganised Speech Distress	0.00(100)	30.00(100)	.00(50)

3.2.1.Differences between UHR – and UHR + and the Demographic Variables

A Mann-Whitney U test, a Pearson Chi-Square and a Fisher's exact test were performed to analyse the possible effects of the demographic variables on the risk of psychosis. No significant differences were found in age, gender, education level, living situation, occupation, alcohol misuse, physical concern or family history of mental health problems.

Significant differences were found between young people with a UHR- and UHR + in drug consumption and having a mental health problem. Young people that were regular drug consumers and that had an undiagnosed mental health problem were revealed to be significantly more prone to being in an at-risk mental state for psychosis in comparison to young people who did not regularly consume drugs and did not have a mental health concern disrupting their life. The results are presented in Table 19:

Table 19: Differences between UHR+ and UHR- and demographic variables

	UHR – (n=30)	UHR + (n=46)	Statistics	p-values
Age (Median, range)	19.5(9)	19(9)	Mann-Whitney U	.641
Gender: male (n,%)	18(43.90)	23(56.09)	Fisher's Exact	.482
Education level (Completed primary or secondary school)	11(44.0)	14 (56.0)	Pearson Chi-	.737
Living Situation (living alone)	8 (27.6)	21 (72.4)	Pearson Chi-	.143
Occupation (not working or studying)	15	35	Pearson Chi-	.063
Alcohol misuse (yes)	21(40.4)	31(59.6)	Pearson Chi-	.811
Drugs misuse (yes)	10(25.6)	29 (74.4)	Fisher's Exact	.018*
Physical concern (e.g. asthma) (yes)	6(30.0)	14(70.0)	Fisher's Exact	.426
Mental Health Problems (e.g. undiagnosed Depression) (yes)	10 (22.2)	35 (77.8)	Fisher's Exact	.000*
Family History of Mental Health Problems (yes) (n,%)	18 (35.3)	33(64.7)	Fisher's Exact	.325

*significant at $p < .05$

3.2.2. Differences between UHR – and UHR + and the Clinical and Interpersonal Variables

A Mann-Whitney U test and a T-test for independent samples were performed to analyse the possible effects of the clinical and interpersonal variables between young people with a UHR- and a UHR+ status for psychosis. As shown in the table below, young people with a UHR+ scored significantly higher than young people with a UHR- in “Anxiety” and “Depression” levels, and in “Attachment Anxiety” and “Attachment Avoidance levels.” Significant differences were also found for the IIP domains “Cold/Distant,” “Socially Avoidant,” “Non-assertive” and IIP total score, with young people with a UHR+ scoring higher than young people with a UHR-. Young people with a UHR+ tend to use “Non-productive Coping” strategies in comparison to UHR-. With regards to perceived social support for the total network, young people with a UHR+ scored significantly higher than UHR- in the domains “Actual Emotional Support,” “Discrepancy Emotional Support” and “Discrepancy Practical Support.” The results are presented in the table below:

Table 20: Differences in Clinical and Interpersonal variables between UHR+ and UHR- groups

	UHR – (n=30)	UHR + (n=46)	Statistics	p- values
HADS anxiety score (Mean, SD)	5.5(3.77)	9.58(4.22)	T-test	.000*
HADS depression score (Median, range)	4.5(17)	9(18)	Mann-Whitney U	.000*
PAM anxiety score (Median, range)	0.88(0.69)	1.60(0.71)	Mann-Whitney U	.000*
PAM avoidance score (Mean, SD)	1.44(2.25)	1.94(2.50)	T-test	.031*
IIP Domineering/Controlling (Median, range)	4(14)	4.5(14)	Mann-Whitney U	.410
IIP Vindictive/Self-centered (Median, range)	2.5(14)	6 (16)	Mann-Whitney U	.164
IIP Cold/Distant (Median, range)	4(13)	8 (16)	Mann-Whitney U	.002*
IIP Socially Avoidant (Median, range)	3(14)	6 (16)	Mann-Whitney U	.003*
IIP Non-assertive (Median, range)	3(14)	7 (16)	Mann-Whitney U	.001*
IIP Overly Accommodating (Median, range)	4(14)	8 (14)	Mann-Whitney U	.022*
IIP Self-Sacrificing (Median, range)	8(12)	8.5(16)	Mann-Whitney U	.228
IIP Intrusive/Needy (Median, range)	4(14)	5 (14)	Mann-Whitney U	.233
IIP-32 total score (Mean, SD)	38.03(25.23)	54.35(20.36)	T-test	.003*
ACS Solving the Problem (Mean, SD)	3.31(0.78)	3.14(3.50)	T-test	.372
ACS Non-productive Coping (Mean, SD)	2.48(6.66)	27.00(5.89)	T-test	.001*
ACS Reference to Others (Mean, SD)	2.34(0.85)	2.61(0.76)	T-test	.173
SOS Actual Emotional Support (Median, range)	5.94(6)	4.81(6)	Mann-Whitney U	.012*
SOS Ideal Emotional Support (Median, range)	6.33(4.11)	6(6)	Mann-Whitney U	.635
SOS Actual Practical Support (Median, range)	5.72(6)	4.67(6)	Mann-Whitney U	.013*
SOS Ideal Practical Support (Median, range)	6.33(3.5)	6(6)	Mann-Whitney U	.493
SOS Discrepancy Emotional Support (Median, range)	0.22(4)	1.06(3.89)	Mann-Whitney U	.001*
SOS Discrepancy Practical Support (Median, range)	0.21(4)	1.28(6)	Mann-Whitney U	.002*

*significant at $p < .05$

Although not achieving statistical significance, the UHR+ and UHR- groups differed substantially in all clinical and interpersonal variables. Young people meeting the UHR criteria for psychosis presented higher levels for “Anxiety,” “Depression,” “Attachment Anxiety” and “Avoidance.” UHR+ participants also reported higher levels of “Interpersonal Problems” and use of “Non-productive Coping” strategies. Moreover, the UHR+ group expressed lower levels of perceived social support and higher scores for discrepancies between emotional and practical support in comparison to the UHR- group.

3.3. Summary of Part III

The majority of the sample in the present study has an At-risk Mental State for psychosis (60.5%), as assessed with the CAARMS. This is a very expressive result in this help-seeking population. The exploration of CAARMS subscales for the ultra-high-risk criteria was meaningful in presenting a sample of young people falling in the attenuated psychotic symptoms aspect, rather than in the vulnerability risk or BLIPS categories. With regards to the severity of symptoms, the sample in the present study exhibited moderate to moderately severe levels of psychotic symptomatology and general psychopathology. As theoretically expected, the severity and distress scores were more expressive in young people presenting an at-risk mental state in comparison to young people without an at-risk mental state for psychosis. Interestingly, both the whole sample and the UHR+ group presented severe levels of impaired role functioning and depression. The group with an at-risk mental state presented moderate to moderately severe levels of alogia, avolition, social isolation and aggressive/dangerous behaviour.

The results revealed significant differences between the two groups (UHR+ and UHR-) in relation to drug consumption and mental health problems. Young people at UHR+ for psychosis were significantly more likely to misuse drugs than young people at UHR- for psychosis. In addition, young people with a UHR+ had significantly more mental health problems than young people with a UHR-.

The interpersonal and clinical constructs were more prominent when comparing young people with (UHR+) and without (UHR-) an at-risk mental state for psychosis. In relation to social support, in this study, young people with a UHR+ for psychosis had significantly low levels of actual emotional support and actual practical support, and discrepancies in both emotional and practical support, compared to young people with a UHR-.

Young people with a UHR+ presented higher levels of anxiety and depression of clinical significance. They also reported moderately higher levels of

interpersonal problems, and specifically in the domains cold/distant, socially avoidant, non-assertive and overly accommodating. The UHR+ group tended to use ostensibly non-productive coping strategies. Compared to the young people with a UHR-, attachment anxiety and attachment avoidance were higher in the UHR+ group and above the mean.

PART IV: Hypotheses

To test the hypothesised indirect effects between the independent and the dependent variables proposed in this thesis, it was decided to perform multivariate multiple linear regressions using path analysis with IBM® SPSS® Amos™ 21. Path analysis is an extension of the regression model, used to test the fit of the correlation matrix against two or more causal models. The regression weights predicted by the model are compared with the observed correlation matrix for the variables, and a goodness-of-fit statistic is then calculated. It is a powerful statistical tool that allows for more complicated and realistic models than the simpler multiple regression method.

4.1. Missing Values

A priori missing value analyses, with SPSS, revealed that all items had been correctly entered for all the variables used in this study. Missing value analyses of each variable of interest (interval or ratio) showed that missing values did not exceed 5% per item or 20% per subject, suggesting these were missing completely at random. Therefore, missing values were treated with mean imputation (Arbuckle, 2012).

4.2. Validation of Statistical Assumptions

To meet statistical assumptions, each model was tested a priori for the analysis of **multivariate normality**, analysis of outliers (with Mahalanobis distances) and multicollinearity. For multivariate normality, values were considered problematic when skewness (Sk) >3 and kurtosis (Ku) $>7-10$. However, in all the analyses performed there were no data normality problems. The examination of potential data **outliers** was performed through the analysis of the Mahalanobis

distance. The presence of an outlier was considered when one observation had p1 and p2 values below .05, simultaneously. When this was the case, the observation was removed from the analysis. If the removal of the observation did not improve the model's characteristics, the observation was maintained. **Multicollinearity** problems were considered if the correlation value between the independent variables, the regression coefficients and the respective standard errors was high. Furthermore, multicollinearity existed if the VIF analysis revealed values above 5. However, in all the analyses performed in this study there were no multicollinearity problems. All the statistical validation assumption validations (via tables) are presented in Appendix 5 and are divided by normality, outliers, multicollinearity according to the hypothesis to which they refer.

4.3. Dependent and Independent Variables

Path analysis focuses on relationships between multiple observed variables and enables the analysis of several regression equations simultaneously (Lleras, 2005). In this thesis, all variables were treated as observed variables with multiple indicators. Specifically, **independent variables** included in the analyses were: Attachment (measured with the PAM), which included the observed variables Attachment Avoidance (ATTAVOI) and Attachment Anxiety (ATTANX), Coping (measured with the ACS), which included the observed variables Non-productive Coping (NProdCop), Productive Coping (ProdCop) and Reference to Others (RefOth), and Emotional Distress, which included the observed variables Depression (HADDep) and Anxiety (HADAnx), both measured with the HADS, and the variable General Psychopathology (GenPsyc), which was measured with the CAARMS. The variables measuring Interpersonal Problems (measured with the IIP-32) were: Domineering/Controlling (IIPdomM), Vindictive/Self-centered (IIPvinM), Cold/Distant (IIPcolM), Socially Inhibited (IIPscoM), Non-Assertive (IIPnonM), Overly Accommodating (IIPoveM), Self-Sacrificing (IIPselM), Intrusive/Needy (IIPintM) and Total (IIPtot). The variables used to measure Social Support (measured with the SOS) were: Actual Emotional Support (AEMOX), Ideal Emotional Support

(IEMX), Actual Practical Support (APR), Ideal Practical Support (IPR), Discrepancy Emotional Support (DEMX), Discrepancy: Practical Support (DPR) and Total Discrepancy (DTotx).

The **dependent variables** assessing the **Risk of Psychosis** (measured with the CAARMS) were: Unusual Thought Content Severity (UTCSev), Non-Bizarre Ideas Severity (NBISev), Perceptual Abnormalities Severity (PASev), Disorganised Speech Severity (DSSev), Unusual Thought Content Distress (UTCDis), Non-Bizarre Ideas Distress (NBIDis), Perceptual Abnormalities Distress (PADis) and Disorganised Speech Distress (DSDis). Severity variables were the product of the Global Severity Rating and Frequency scores (as the authors recommend).

4.4. Model Fit Indices

Estimations for the model fit were performed using full maximum likelihood (ML), and model fit indices were chosen according to the literature recommendations (Kline, 1998; Lleras, 2005). Therefore, the reported indexes were the Chi-square divided by the degrees of freedom (χ^2 / df), the Root-mean-square error of approximation (RMSEA), Bentler's Comparative Fit Index (CFI) and the Joreskog-Sorbom Goodness-of-Fit Index (GFI).

Model fit assumptions mean that the Chi-square value (Tabled χ^2) should be compared with the tabled value of given degrees of freedom (df); a value for the RSMEA of less than .05 indicates a good model fit. An RMSEA of < .05 is considered ideal, .05 to .08 indicates acceptable parsimony, .08 to .10 is considered mediocre and above .10 signals a poor fit (Kline, 1998). The CFI is an incremental fit index used to compare the hypothesised model to the null model with no predictors, where a value close to 1 indicates a very good model fit (Kline, 1998). The goodness

of fit index (GFI) was used to test which proportion of the variance in the sample variance covariance matrix was accounted for by the model. Values of GFI higher than .9 indicate a good model, and a saturated model will have a perfect fit value of 1 (Byrne, 2009).

4.5. Data Analysis Procedure

The analyses were conducted based on two different theoretical proposals. Firstly, they were performed with all the participants in this study (N=76). This decision was made in order to empower the statistical assumptions and because the preliminary univariate analysis conducted in the previous Parts I, II and III revealed that the majority of the participants in this study were young people with a propensity toward alcohol and drug misuse, mental health problems and serious occupational and living inadequacies. Furthermore, data analysis of the total sample showed that these young people were suffering from meaningful levels of emotional distress (depression and anxiety), with a tendency to use non-productive coping to deal with stressful situations, with a moderate degree of interpersonal difficulties, with important social support impairments and with a relative low decline in overall functioning prior to entering the study (SOFAS). Importantly, descriptive analyses revealed that the whole sample had mild (2) to moderate (3) severity scores in the CARRMS subscales when measuring the risk of psychosis (Unusual Thought Content Severity, Non-Bizarre Ideas Severity, Perceptual Abnormalities Severity, Disorganised Speech Severity).

Moreover, all the participants in this study were help-seeking young people who had sought help from community mental health services. Thus, it is of great interest to understand the impact that attachment has on the risk of developing psychosis, and of the potential indirect effects of coping, interpersonal problems, social support and emotional distress in this population.

Secondly, the hypotheses were tested in a help-seeking young people group that met UHR CAARMS criteria (ARMS individuals) (UHR+, n=46). As shown in the previous Parts I, II and III, this group of young people revealed high and significant clinical deficits and interpersonal impairments.

Each hypothesis analysis performed with AMOS produced firstly an analysis of the trajectories' significance via non-standardised regression weights. All the non-statistically significant ($p > 0.10$) and moderately significant trajectories ($0.05 < p < 0.1$) were sequentially removed (sequential model "refinement"), and only the significant trajectories were maintained in each model via standardised regression weights. The tables presenting the unstandardised regression weights, which included all trajectories (non-significant, moderately significant and significant), are presented in Appendix 6 and are organised according to the hypothesis analyses to which they refer o (1 to 6). Therefore, the tables that are presented below refer only to the refined models, and all trajectories are statistically significant ($p < .05$) (via standardised regression weights). Furthermore, the tables also show co-variances, the total, direct and indirect effects, where appropriate. (where $p = .000$, the reader will see ***)

4.7. Hypotheses

Hypothesis 1: Attachment insecurity has both a direct effect on the risk of psychosis in help-seeking young people and an indirect effect whereby coping, interpersonal problems and social support mediate this relationship.

Hypothesis 2: Emotional distress has an indirect effect on the impact of attachment insecurity in relation to the risk of psychosis in young people seeking help.

Hypothesis 3: Attachment insecurity has not only a direct effect on severity and distress caused by unusual thought content and distress caused by perceptual abnormalities, but also an indirect effect whereby this relationship is influenced by emotional distress, coping, interpersonal problems and social support in group of

young people with an at-risk mental state for psychosis.

4.8. Analyses

As mentioned, the analyses of the hypotheses were tested taking in consideration to distinct two groups. The hypotheses were first tested for the overall sample of help-seeking young people (N=76). Then, the hypotheses were test for the subgroup of young people who presented an ARMS (N=46).

For the total sample on help-seeking young people

4.8.1. Hypothesis 1

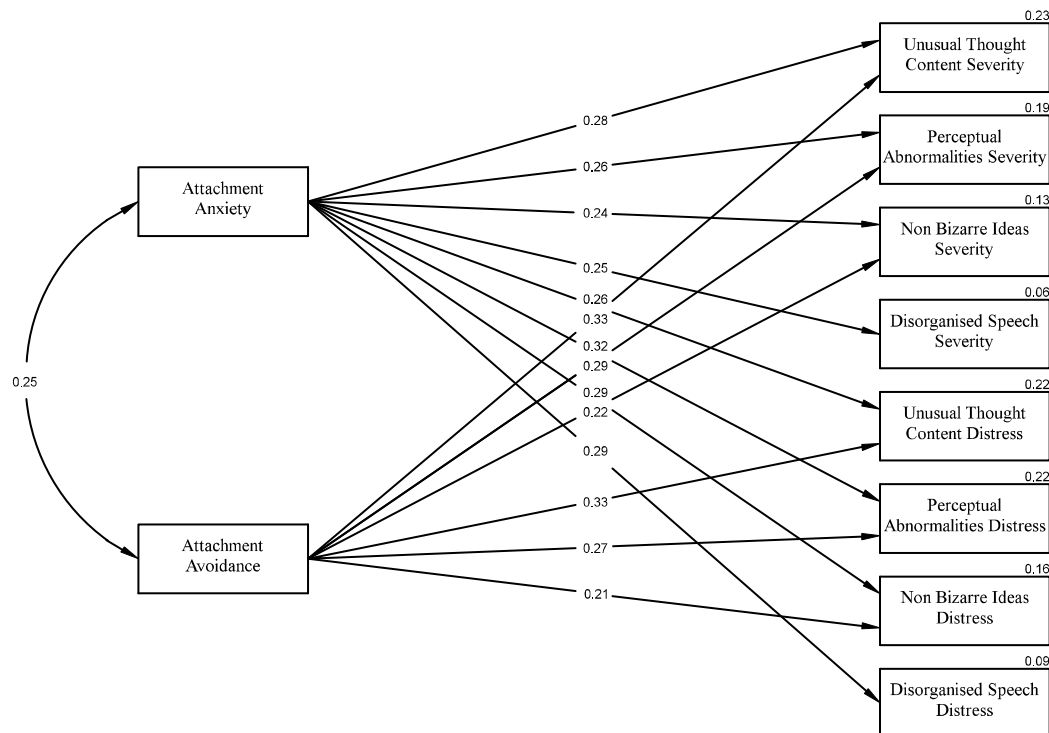
In order to analyse the proposed effects, hypothesis 1 was separated into four parsimonious models. The first model tested the direct effects of attachment insecurity in the risk of psychosis (Model 1). Each of the other models was tested based on the psychological mechanisms proposed to have an effect on the relationship between attachment and the risk of psychosis in help-seeking young people. These mechanisms were coping, interpersonal problems and social support (Models 2, 3 and 4, respectively).

4.8.1.2. Model 1: attachment insecurity has a direct effect in the risk of psychosis

In accordance with the theory it was proposed that attachment insecurity (attachment anxiety and attachment avoidance) would have a direct effect on the risk of psychosis in the sample of help-seeking young people. The basic model provided a good fit to the data ($\chi^2/df= 1.551$, CFI=0.998, GFI=0.992, RMSEA=0.086). Figure 7 demonstrates that, in agreement with the literature, attachment insecurity (both

attachment anxiety and attachment avoidance) directly predicts higher levels of psychotic symptomatology.

Figure 7: Path Model for the impact of attachment insecurity in the CAARMS Ultra-High-Risk subscales in help-seeking young people (N=76)



The adjusted and refined model explains 23% of the observed variances in the variable “Unusual Thought Content Severity,” 22% of the observed variance in the variable “Unusual Thought Content Distress” and in the variable “Perceptual Abnormalities Distress,” 19% of the observed variance in the variable “Perceptual Abnormalities Severity,” 16% of the observed variance in the variable “Non-bizarre Ideas Distress,” 13% of the observed variance in the variable “Non-bizarre Ideas Severity,” 9% of the observed variance in the variable “Disorganised Speech Distress” (which can only be explained by attachment anxiety) and 6% of the observed variance in the variable “Disorganised Speech Severity” (also only explained by attachment anxiety).

Based on these results, “Attachment Insecurity” has a greater impact on the variables associated with severity and distress in “Unusual Thought Content” and in the distress associated with “Perceptual Abnormalities Distress.” The standardised regression weights are shown in Tables 21 and 22.

Table 21: Standardised Regression Weights for Model 1

			Estimate	S.E.	C.R.	P
Unusual Thought Content Severity	<-	Attachment Anxiety_1	.591	.223	2.653	.008
Perceptual Abnormalities Severity	<-	Attachment Anxiety_1	.515	.210	2.457	.014
Non-bizarre Ideas Severity	<-	Attachment Anxiety_1	.468	.216	2.169	.030
Disorganised Speech Severity	<-	Attachment Anxiety_1	.509	.230	2.216	.027
Unusual Thought Content Distress	<-	Attachment Anxiety_1	11.505	4.678	2.459	.014
Perceptual Abnormalities Distress	<-	Attachment Anxiety_1	13.924	4.597	3.029	.002
Non-bizarre Ideas Distress	<-	Attachment Anxiety_1	13.232	5.017	2.638	.008
Unusual Thought Content Severity	<-	Attachment Avoidance_1	.901	.276	3.266	.001
Perceptual Abnormalities Severity	<-	Attachment Avoidance_1	.730	.256	2.851	.004
Non-bizarre Ideas Severity	<-	Attachment Avoidance_1	.544	.262	2.078	.038
Unusual Thought Content Distress	<-	Attachment Avoidance_1	18.695	5.489	3.406	***
Perceptual Abnormalities Distress	<-	Attachment Avoidance_1	15.327	5.303	2.890	.004
Non-bizarre Ideas Distress	<-	Attachment Avoidance_1	12.397	5.721	2.167	.030
Disorganised Speech Distress	<-	Attachment Anxiety_1	10.459	3.932	2.660	.008

Table 22: Standardised Regression Coefficients for Model 1

			Estimate
Unusual Thought Content Severity	<-	Attachment Anxiety_1	.277
Perceptual Abnormalities Severity	<-	Attachment Anxiety_1	.263
Non-bizarre Ideas Severity	<-	Attachment Anxiety_1	.240
Disorganised Speech Severity	<-	Attachment Anxiety_1	.248
Unusual Thought Content Distress	<-	Attachment Anxiety_1	.258

			Estimate
Perceptual Abnormalities Distress	<-	Attachment Anxiety_1	.317
Non-bizarre Ideas Distress	<-	Attachment Anxiety_1	.287
Unusual Thought Content Severity	<-	Attachment Avoidance_1	.331
Perceptual Abnormalities Severity	<-	Attachment Avoidance_1	.292
Non-bizarre Ideas Severity	<-	Attachment Avoidance_1	.219
Unusual Thought Content Distress	<-	Attachment Avoidance_1	.329
Perceptual Abnormalities Distress	<-	Attachment Avoidance_1	.274
Non-bizarre Ideas Distress	<-	Attachment Avoidance_1	.211
Disorganised Speech Distress	<-	Attachment Anxiety_1	.294

4.8.1.3. Model 2: Coping mediates the relationship between Attachment insecurity and the Risk of Psychosis

As per the literature, it was proposed that attachment insecurity (attachment anxiety and attachment avoidance) would have a significant impact on the risk of psychosis, and that coping would mediate this relationship. However, the model provided a poor fit to the data ($\chi^2/df = 2.017$, CFI=0.938, GFI=0.908, RMSEA=0.116). Based on this result, one can assume that in this sample of help-seeking young people with mild to moderate psychotic experiences, coping is not a mediator of the relationship between attachment insecurity and the risk of psychosis.

4.8.1.4. Model 3: Interpersonal Problems mediate the relationship between Attachment insecurity and the Risk of Psychosis

It was hypothesised that attachment insecurity (attachment anxiety and attachment avoidance) would have a significant impact on the risk of psychosis, and that the variables measuring interpersonal problems would mediate this relationship.

The first model tested with all the IIP-32 subscales provided a poor fit (GFI= 0.653) (AMOS did not perform other adjustment indicators). At this stage, to further test the potential mediation effect of interpersonal problems in the relationship between attachment insecurity and the risk of psychosis, it was decided to test the model only with the IIP-32 total score, which reflects an overall score of interpersonal difficulties. However, this model also provided a poor fit to the data ($\chi^2(702)= 2340$, GFI=0.963, AIC=2406.702) (AMOS did not produce any modification indices). Thus, in this help-seeking population of young people, higher levels of interpersonal problems do not mediate the relationship between attachment insecurity and the risk of psychosis.

4.8.1.5. Model 4: Social Support mediates the relationship between Attachment insecurity and the Risk of Psychosis

To test this proposal, all variables from the “Significant Others Scale” were entered into an initial model, with the exception of the Total Discrepancy scores. However, this first model demonstrated a poor fit ($\chi^2/df=13.068$, GFI=0.604, CFI=0.462, RMSEA=0.410). Because of the poor fit it was deemed appropriate to separate the “Significant Others Scale” subscales, according to the literature, into three more parsimonious models. The model tested the actual, ideal and discrepancies in emotional support as potential mediators of the relationship between attachment insecurity and the risk of psychosis demonstrated a poor fit ($\chi^2/df=3.987$, GFI=0.903, CFI=0.924, RMSEA=0.200). Subsequently, a model with the actual, ideal and discrepancies in practical support was tested as a potential mediator of the relationship between attachment insecurity and the risk of psychosis. However, this model demonstrated a poor fit to the data ($\chi^2/df=10.832$, GFI=0.854, CFI=0.687, RMSEA=0.362). Then it was proposed that the negative influence of discrepancies in social support would have a mediation effect on the relationship between attachment insecurity and the risk of psychosis. Figure 8 demonstrates a good fit ($\chi^2/df=0.882$, GFI=0.954, CFI=1.000, RMSEA=0.000). Results revealed that

discrepancies in social support fully mediate the impact of attachment anxiety in the distress associated with disorganised speech in help-seeking young people. The standardised regression coefficients, the total and direct and indirect effects are given below in Tables 23, 24, 25, 26, 27, respectively.

Figure 8: Path model for Mediation of the CAARMS Ultra-High-Risk Subscales through Discrepancies in Social Support in help-seeking young people (N=76)

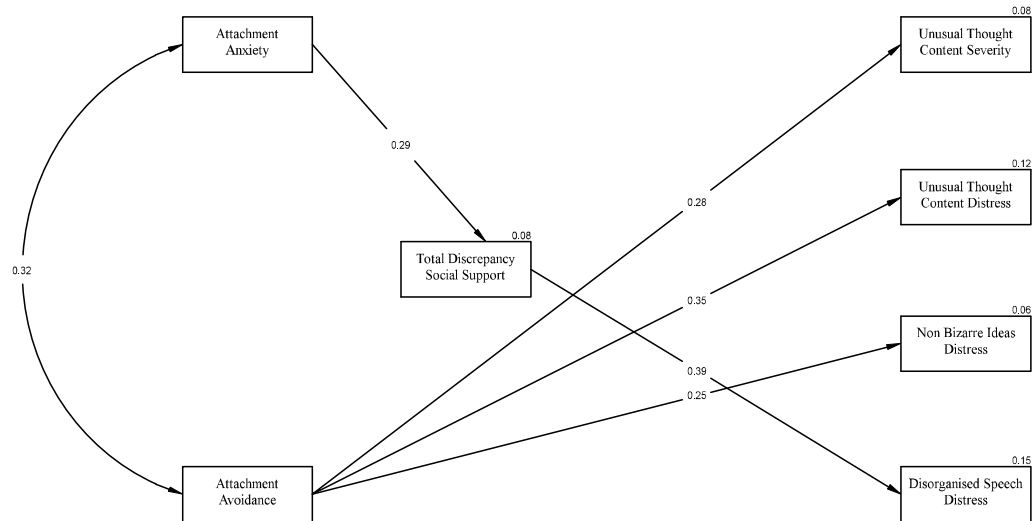


Table 23: Standardised Regression Weights for Model 4

			Estimate	S.E.	C.R.	P	Label
DTOTX	<---	ATTANXM_1	,875	,436	2,007	,045	par_10
UTC_SEVM	<---	ATTAVOM_1	2,876	1,475	1,949	,051	par_1
UTC_DIS	<---	ATTAVOM_1	19,021	7, 246	2,625	,009	par_2
NBI_DIS	<---	ATTAVOM_1	13,540	6,953	1,947	,051	par_11
DS_DIS	<---	DTOTX	5,444	1,635	3,329	***	par_12

Table 24: Standardised Regression Coefficients for Model 4

			Estimate
DTOTX	<---	ATTANXM_1	, 287
UTC_SEVM	<---	ATTAVOM_1	, 279

			Estimate
UTC_DIS	<---	ATTAVOM_1	,346
NBI_DIS	<---	ATTAVOM_1	, 254
DS_DIS	<---	DTOTX	,391

Table 25: Standardised Total Effects for Model 4

	ATTANXM_1	ATTAVOM_1	DTOTX
DTOTX	,875	,000	,000
DS_DIS	4,763	,000	5,444
NBI_DIS	,000	13,540	,000
UTC_DIS	,000	19,021	,000
UTC_SEVM	,000	2,876	,000

Table 26: Standardised Direct Effects for Model 4

	ATTANXM_1	ATTAVOM_1	DTOTX
DTOTX	, 287	,000	,000
DS_DIS	,000	,000	,391
NBI_DIS	,000	, 254	,000
UTC_DIS	,000	,346	,000
UTC_SEVM	,000	, 279	,000

Table 27: Standardised Indirect Effects for Model 4

	ATTANXM_1	ATTAVOM_1	DTOTX
DTOTX	,000	,000	,000
DS_DIS	,112	,000	,000
NBI_DIS	,000	,000	,000
UTC_DIS	,000	,000	,000
UTC_SEVM	,000	,000	,000

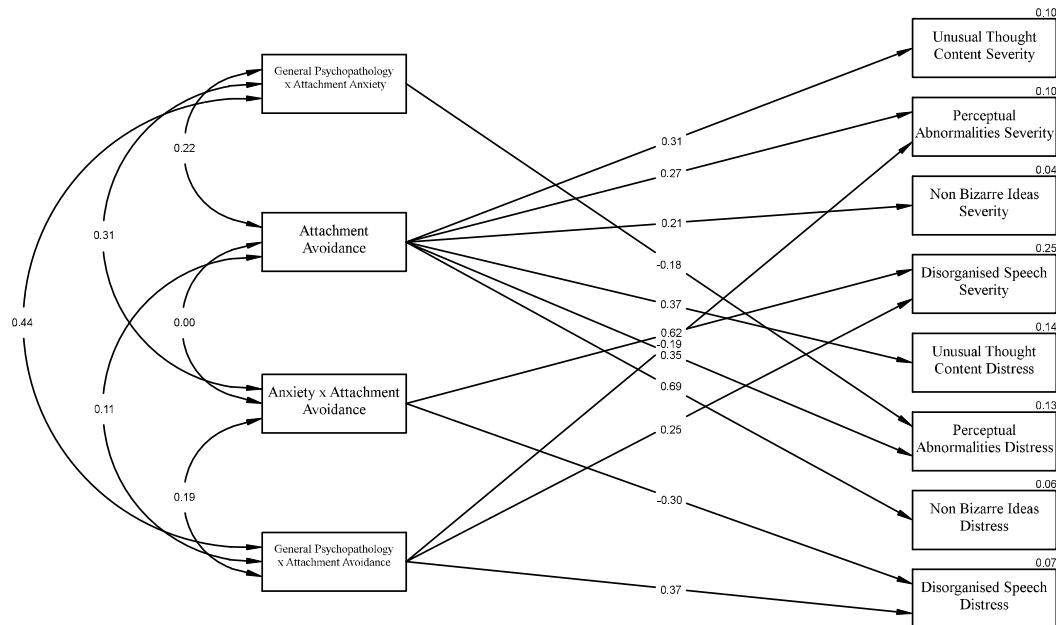
4.8.2. Hypothesis 2

Emotional Distress has an indirect effect on the impact of Attachment Insecurity in the Risk of Psychosis. Hypothesis 2 was tested by initially analysing emotional distress as a potential mediator in the relationship between attachment insecurity and the risk of psychosis. However, the model demonstrated a poor fit ($\chi^2/df= 3.625$, CFI=0.876, RMSEA=0.187). Based on these results, one can assume that in this population of help-seeking young people emotional distress does not mediate the relationship between attachment insecurity and the risk of psychosis.

Hypothesis 2 was tested further to analyse the interaction between emotional distress and attachment insecurity in explaining the risk of psychosis. As previously defined (see 4.3), the variables measuring Emotional Distress were the mean of the HADS Anxiety subscale, the mean of the HADS Depression subscale and the mean of the CAARMS General Psychopathology subscale. The crossed variables were included in the model to test for potential moderation effects, and were operationalized as the product of the interaction between the Emotional Distress variables and the variables measuring Attachment.

Specifically, admitting that the variables measuring emotional distress interact with the attachment variables in explaining the risk of psychosis, the model was constructed where the independent variable attachment (previously centered, *c*, to avoid multicollinearity problems) was tested alone and in combination with crossed variables resulting from the product/interaction with the variables measuring emotional distress. The model had eight independent variables. Figure 9 demonstrates that the model has good fit ($\chi^2/df=0.995$, CFI=1.000, GFI=0.960 and RMSEA=0.000).

Figure 9: Path model for Moderation of the CAARMS Ultra-High-Risk Subscales through Emotional Distress in help-seeking young people (N=76)



With the exception of the interaction General Psychopathology x Attachment Avoidance effect in the distress associated with Disorganised Speech being positive ($b=.0369$, $p=0.003$), all other interaction effects were negative.

In this case, the model explains 25% of total variance in the severity of disorganised speech, 14% of the variance in distress associated with unusual thought content, 13% of the variance in distress associated with perceptual abnormalities distress and 10% of both the severity of unusual thought content and of the perceptual abnormalities. For all the other variables measuring the risk of psychosis, the percentage of the variance explained by the model is less than 10%. The standardised regression weights are presented below in Tables 28 and 29.

Table 28: Standardised Regression Weights for Model 6

			Estimate	S.E.	C.R.	P
Unusual Thought Content Severity (c)	<-	Attachment Avoidance	3.262	1.052	3.100	.002
Perceptual Abnormalities Severity (c)	<-	Attachment Avoidance	2.381	.817	2.913	.004
Non-bizarre Ideas Severity (c)	<-	Attachment Avoidance	2.132	1.013	2.106	.035
Unusual Thought Content Distress (c)	<-	Attachment Avoidance	20.701	5.190	3.989	***
Perceptual Abnormalities Distress (c)	<-	Attachment Avoidance	19.340	4.892	3.954	***
Non-bizarre Ideas Distress (c)	<-	Attachment Avoidance	14.383	5.559	2.587	.010
Perceptual Abnormalities Distress (c)	<-	General Psychopathology x Attach Anxiety	-.132	.037	-3.546	***
Disorganised Speech Severity (c)	<-	HAD Anxiety x Attachment Avoidance	-1.380	.254	-5.432	***
Disorganised Speech Distress (c)	<-	HAD Anxiety x Attachment Avoidance	-3.003	1.249	-2.404	.016
Disorganised Speech Distress (c)	<-	General Psychopathology x Attachment Avoidance	.265	.089	2.982	.003
Perceptual Abnormalities Severity (c)	<-	General Psychopathology x Attachment Avoidance	-.027	.007	-3.780	***
Disorganised Speech Severity (c)	<-	General Psychopathology x Attachment Avoidance	.100	.018	5.508	***

Table 29: Standardised Regression Coefficients for Model 6

			Estimate
Unusual Thought Content Severity (c)	<-	Attachment Avoidance	.314
Perceptual Abnormalities Severity (c)	<-	Attachment Avoidance	.273
Non-bizarre Ideas Severity (c)	<-	Attachment Avoidance	.211
Unusual Thought Content Distress (c)	<-	Attachment Avoidance	.369

			Estimate
Perceptual Abnormalities Distress (c)	<-	Attachment Avoidance	.349
Non-bizarre Ideas Distress (c)	<-	Attachment Avoidance	.247
Perceptual Abnormalities Distress (c)	<-	General Psychopathology x Attachment Anxiety	-.181
Disorganised Speech Severity (c)	<-	HAD Anxiety x Attachment Avoidance	-.621
Disorganised Speech Distress (c)	<-	HAD Anxiety x Attachment Avoidance	-.296
Disorganised Speech Distress (c)	<-	General Psychopathology x Attachment Avoidance	.369
Perceptual Abnormalities Severity (c)	<-	General Psychopathology x Attachment Avoidance	-.195
Disorganised Speech Severity (c)	<-	General Psychopathology x Attachment Avoidance	.634

4.8.3. Hypothesis 3

Attachment insecurity has a direct effect on both severity and distress associated with Unusual Thought Content and in distress associated with perceptual abnormalities, as well as an indirect effect where this relationship is influenced by coping, interpersonal problems social support and emotional distress.

For the purpose of the present thesis it was decided to conduct hypothesis testing for the subsample of help-seeking young people presenting an at-risk mental state for psychosis (N=46). However, it was decided to only include as outcome variables CAARMS ultra-high-risk subscales measuring the severity and distress associated with delusions and bizarre ideas (unusual thought content, UTC_SEVM and UTC_Dis). In addition, the hypotheses were tested for the impact of attachment insecurity and the distress associated with perceptual abnormalities, such as hallucinations (PA_Dis).

This decision was made because in the previous chapter these were the outcome variables that revealed the highest weights (variances) in the models. Furthermore, evidence provided from the literature revealed that these are the three variables that most studies have found to ground the relationship between attachment insecurity and the risk of psychosis. In order to analyse the proposed effects, hypothesis 3 was tested in five steps, and the models were examined as follows.

4.8.4. Model 1: Attachment insecurity has an impact on the severity and distress associated with unusual thought content severity and in the distress associated with perceptual abnormalities.

This model demonstrated a problematic fit ($\chi^2/df=0.000$, GFI=1.000, CFI=1.000, RMSEA=0.455). In this model, attachment anxiety was found not to have a significant impact on the dependent variables. All possible trajectories were present, and the fit indices suggested a saturated model.

4.8.5. Model 2: Negative productive coping has a mediating effect on the relationship between attachment insecurity and the severity and distress associated with unusual thought content severity and also the distress associated with perceptual abnormalities.

This model demonstrated good fit to the data ($\chi^2/df=0.606$, GFI=0.979, CFI=1.000 and RMSEA=0.000). Figure 10 demonstrates that, in accordance with the literature, the tendency to use less productive coping strategies mediates the relationship between attachment insecurity and distress caused by perceptual abnormalities. The standardised regression weights and coefficients are presented below in Tables 30 and 31.

Figure 10: Path model for Mediation of the CAARMS Ultra-High-Risk Subscales through Coping in help-seeking young people with an ARMS (N=46)

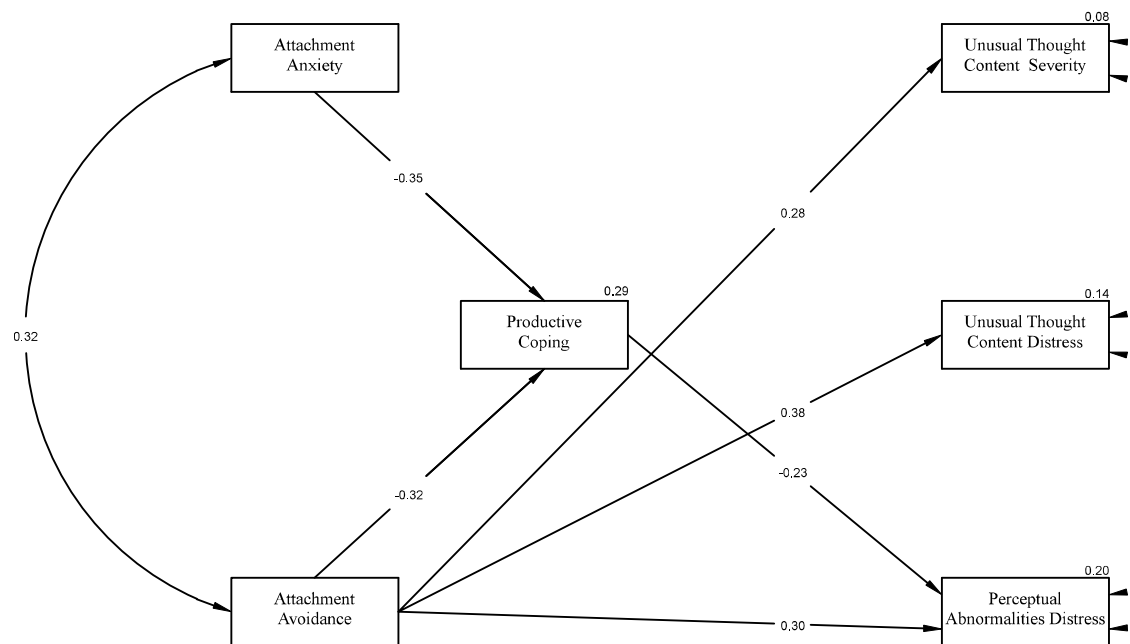


Table 30: Standardised Regression Weights for Model 8

			Estimate	S.E.	C.R.	P
ProdCopM_1	<---	ATTANXM_1	-.375	.143	-2.624	.009
ProdCopM_1	<---	ATTAVOM_1	-.393	.164	-2.395	.017
UTC_SEVM	<---	ATTAVOM_1	2.876	1.475	1.950	.051
PA_DIS	<---	ATTAVOM_1	15.484	7.452	2.078	.038
UTC_DIS	<---	ATTAVOM_1	20.924	7.680	2.724	.006
PA_DIS	<---	ProdCopM_1	-9.792	5.047	-1.940	.052

Table 31: Standardised Regression Coefficients for Model 8

			Estimate
ProdCopM_1	<---	ATTANXM_1	-.348
ProdCopM_1	<---	ATTAVOM_1	-.317
UTC_SEVM	<---	ATTAVOM_1	.279
PA_DIS	<---	ATTAVOM_1	.297
UTC_DIS	<---	ATTAVOM_1	.376
PA_DIS	<---	ProdCopM_1	-.233

4.8.6. Model 3: Interpersonal difficulties have a mediating effect on the relationship between attachment insecurity and the severity and distress associated with unusual thought content severity, as well as the distress associated with perceptual abnormalities.

The final model solution revealed that interpersonal problems do not have a mediating effect on the relationship between attachment insecurity and the severity and distress associated with unusual thought content, or on the distress associated with perceptual abnormalities. However, these results may be related to the small sample size and not to the non-existence of a mediating effect. The only fit index that AMOS retrieved was a GFI= 0.975.

4.8.7. Model 4: Overall discrepancies felt for both emotional and practical support mediate the relationship between attachment and the severity and distress associated with unusual thought content severity, as well as the distress associated with perceptual abnormalities.

This model demonstrated a good fit (χ^2 /df= 0.617, GFI=0.970, CFI=1.000, RMSEA=0.000). However, the results revealed that discrepancies between emotional

and practical support do not have a mediating effect on the relationship between attachment insecurity and the severity and distress associated with unusual thought content, or the distress associated with perceptual abnormalities.

4.8.8. Model 5: Anxiety and depression have an indirect effect on the relationship between attachment insecurity and the severity and distress associated with unusual thought content severity, as well as the distress associated with perceptual abnormalities

This model was tested initially by analysing anxiety and depression as potential mediators of the relationship between attachment insecurity and the severity and distress associated with unusual thought content severity, as well as the distress associated with perceptual abnormalities. However, they demonstrated a poor fit ($\chi^2/df=4.378$, GFI=0.778, CFI=0.659, RMSEA=0.274).

The model was tested further, in order to analyse the interaction between the anxiety and depression and attachment insecurity variables in explaining the severity and distress associated with unusual thought content severity, as well as the distress associated with perceptual abnormalities. However, AMOS did not run the model, because the matrix was found to be non-invertible (non-positive definite), most likely due to the small sample size.

Based on these results, anxiety and depression do not have an indirect effect on the relationship between attachment insecurity and the severity and distress associated with unusual thought content severity, as well as the distress associated with perceptual abnormalities in this sample help-seeking young people with an at-risk mental state for psychosis, most likely because of the small sample size.

Summary of the Models Tested For Both Groups

The models tested for the all sample (N=76) and for a subgroup of young people with an at-risk mental state (N=46), according to this study hypotheses were as follows:

Hypothesis 1: Attachment insecurity has both a direct effect on the risk of psychosis in help-seeking young people and an indirect effect whereby coping, interpersonal problems and social support mediate this relationship.

- 1) Attachment has a direct effect on the risk of psychosis in help-seeking young people. This model provided a good fit to the data (Figure 7).
- 2) Attachment insecurity has both a direct effect on the risk of psychosis in help-seeking young people and an indirect effect whereby coping mediate this relationship. This model provided a poor fit to the data.
- 3) Attachment insecurity has both a direct effect on the risk of psychosis in help-seeking young people and an indirect effect whereby interpersonal problems mediate this relationship. This model provided a poor fit to the data. Therefore, model 3 was deconstructed and tested in two models where the mediation effect of interpersonal problems in the relationship between Attachment Insecurity and the risk of psychosis, was considered only using the IIP-32 total score. This model also provided a poor fit to the data.
- 4) Attachment insecurity has both a direct effect on the risk of psychosis in help-seeking young people and an indirect effect whereby social support mediate this relationship. This model provided a poor fit to the data. Therefore, model 4 was deconstructed and tested in two models where the mediation effect of social support in the relationship between Attachment Insecurity and the risk of psychosis, was considered firstly testing for the mediation effect of the SOS subscales actual, ideal and discrepancies in emotional support; and secondly testing for the mediation effect of the SOS subscales actual, ideal and discrepancies in practical support. Both these models provided a poor fit to the data. Then it was deemed appropriate to test the theoretical hypothesis that the

negative influence of discrepancies in social support would have a mediation effect on the relationship between attachment insecurity and the risk of psychosis. This model provided a good fit to the data (Figure 8).

Hypothesis 2: Emotional distress has an indirect effect on the impact of attachment insecurity in relation to the risk of psychosis in young people seeking help.

A first model analysing emotional distress as a potential mediator in the relationship between attachment insecurity and the risk of psychosis was tested, but this provided a poor fit to the data. The hypothesis was tested in another model further to analyse the interaction between emotional distress and attachment insecurity in explaining the risk of psychosis (moderation effect). This model provided a good fit to the data (Figure 10).

Hypothesis 3: Attachment insecurity has not only a direct effect on severity and distress caused by unusual thought content and distress caused by perceptual abnormalities, but also an indirect effect whereby this relationship is influenced by emotional distress, coping, interpersonal problems and social support in a group of help-seeking young people with an at-risk mental state for psychosis.

As for the all group, this hypothesis was tested in five different models, but only considering the subgroup of young people with an at-risk mental state for psychosis.

1) Attachment insecurity has an impact on the severity and distress associated with unusual thought content severity and in the distress associated with perceptual abnormalities. This model provided a problematic fit to the data.

2) Negative productive coping has a mediating effect on the relationship between attachment insecurity and the severity and distress associated with unusual thought content severity and also the distress associated with perceptual abnormalities. This model provided a good fit to the data (Figure 11).

3) Interpersonal difficulties have a mediating effect on the relationship between attachment insecurity and the severity and distress associated with unusual thought

content severity, as well as the distress associated with perceptual abnormalities. This model was tested only considering the IIP-32 total score; however, it provided a poor fit to the data.

4) Overall discrepancies felt for both emotional and practical support mediate the relationship between attachment and the severity and distress associated with unusual thought content severity, as well as the distress associated with perceptual abnormalities. This model provided a poor fit to the data.

5) This model was deconstructed in two models. Initially it was tested by analysing anxiety and depression as potential mediators of the relationship between attachment insecurity and the severity and distress associated with unusual thought content severity, as well as the distress associated with perceptual abnormalities; and then by testing the same variables as potential moderators. However, both models provided a poor fit to the data.

4.9. Summary of Part IV

The results presented herein show that attachment insecurity does indeed predict an increased risk of psychosis, especially in the severity and distress associated with the experience of unusual thought content and perceptual abnormalities, in a sample of help-seeking young people. Coping was found to mediate the effect of attachment insecurity in distress associated with the experience of perceptual abnormalities, but only in those individuals with an ARMS for psychosis. Discrepancies in the amount of social support received fully mediate the effect of attachment anxiety in the distress associated with disorganised thinking in a wider group of help-seeking young people. Emotional distress was found to exacerbate further the effect on attachment insecurity in the risk of psychosis. The next section will discuss the results presented in this chapter in terms of both theoretical and clinical implications.

SECTION IV: Discussion

1. Introduction

The possibility of identifying and preventing psychotic disorders by intervening in the early stages of their onset (Yung et al., 1994) led to an interest in developing “close in” strategies for detecting young people with a presumably at-risk mental state for psychosis. However, recent findings regarding declining transition rates and the non-introduction of at-risk mental state criteria in the DMS-5 have highlighted the need to continue to carry out research in the at-risk mental state paradigm. In addition, evidence supporting the course of psychotic experiences and co-occurring affective symptoms, and the association between persistent psychotic experiences and increased levels of affective symptoms, have led to suggestions that emotional disturbances should be considered as necessary conditions for the onset of psychosis (Morrison et al. 2012).

This thesis presents an exploration of the validity of the theoretical link between attachment, emotional dysfunction and the increased risk of psychotic symptoms in a help-seeking population of young people currently using community mental health services in Edinburgh. This population presented with maladjustment and/or psychological distress. This section summarises empirically and theoretically the results of this work, and it will be divided into four parts. The first part will summarise the key clinical and interpersonal characteristics of a help-seeking population – a profile that will be presented as taking into account a broad population of help-seeking young people and a subgroup of help-seeking young people with an ARMS for psychosis. The second part will focus on the implications derived from the hypotheses exploration and arguments will be addressed for each of the research questions. The third part will emphasise the clinical and research implications originating from this thesis, while the fourth part will present the strengths and limitations of the study.

3. Overview of the Sample Characteristics

The results of the present thesis were obtained from 76 help-seeking young people, the majority of whom were living alone (38.2%), with a relevant impaired role functioning rate (65.8% of the participants were not working or studying). The majority had drug and alcohol misuse (68.4% and 51.3%, respectively), and 59.2% reported suffering from an undiagnosed mental health problem. The majority of the participants (67.1%) had a family member with a mental health problem (e.g. depression), and from this cohort, 23.5% had a first-degree relative with a diagnosed psychotic disorder.

The CAARMS results revealed that in terms of subthreshold positive psychotic symptoms, this group of help-seeking young people had mild severity levels relating to unusual thought content and non-bizarre ideas, and moderate severity levels of perceptual abnormalities. Regarding the experiences of negative symptomology, these young people were found to have moderate to moderately severe levels of avolition, anhedonia, impaired role functioning and depression.

Although this study was cross-sectional, and one cannot assume the stability of symptoms over time, the expression of clinical symptoms found in this thesis can be viewed by considering studies into the stability of psychotic symptoms, where evidence has shown consistently that while the developmental expression of psychotic experience is common and mostly transitory, when young people are seeking help and are exposed to significant environmental risk factors and emotional distress, the persistence of their symptoms increases the probability of the onset of impairment and the need for care (van Os et al., 2009).

Actually, in this study young people scored relatively high in both the depression and the anxiety subscales of the HADS, which revealed moderately high levels of emotional distress within the whole sample. Thus, this population of help-seeking young people had important premorbid emotional disturbance indicators, and one can therefore assume that emotional distress has an additive effect on the

expression of psychotic symptoms, which can be viewed as representing similar patterns of psychopathological symptoms as seen in psychotic disorders (as argued by van Os et al., 2000). Furthermore, these results could be interpreted in line with the notions that transitions into the psychosis continuum may occur due to cognitive and emotional responses to psychotic symptoms (Krabbendam et al., 2004), and it gives additional weight to the notion that this population is at increased risk of psychosis and in need of care. This help-seeking population was found to have overall good levels of perceived actual and ideal emotional and practical support, and low levels of discrepancy between both emotional and practical support; however, the majority were not working or studying and they were living alone, which meant limited social support networks.

As observed in the study by Hanssen et al. (2005), their participants who reported psychotic symptoms had more family history of hallucinations and delusions, a lifetime history of using mental health services and a range of emotional problems that interfered with normal social activities. In addition, as considered by Yung et al. (2007), young people with poor functioning skills may be less able to cope with psychotic experiences, be more susceptible to depression and distress, be more likely to use narcotic substances and have fewer social support networks than young people with better levels of functioning. This then manifests in a sequential process whereby psychotic experiences worsen in direct response to these factors, eventually culminating in a psychotic episode.

Moreover, the characteristics presented herein are consistent with the postulations of cognitive psychosis models, which suggests that psychotic symptomatology occurs when a stressful trigger event (such as an adverse life event, adverse environments, illicit drug use or periods of isolation) provokes emotional changes. At the onset of one of these episodes, the most prominent symptoms are delusional beliefs and hallucinations (Garety et al., 2001).

With regards to the attachment dimensions, the overall sample of the present thesis was found to score higher than above the mean in the dimension attachment avoidance than in the dimension attachment anxiety, indicating that the participants

had a higher tendency to distance themselves emotionally from others rather than adopt a very close bond, due to a fear of potential loss.

This is consistent with the literature when considering higher attachment avoidance in people with psychotic phenomena, and it corroborates evidence regarding the psychosis continuum, as one can assume that young people who experience subthreshold psychotic symptoms also tend to present with higher levels of avoidant attachment. Attachment avoidance, is associated with negative beliefs about the self and others, as well as maladaptive coping methods in relation to regulating distress, which in turn may increase susceptibility to symptoms (as argued by Berry, Barrowclough & Wearden, 2007).

In this sample of help-seeking young people with subthreshold psychotic symptoms, the attachment anxiety dimension was found to correlate with depression, non-productive coping, difficulties in dealing with others (associations between the majority of the domains of interpersonal problems), and discrepancies in emotional social support. These results corroborate findings from previous studies, where anxious attachment has been found to be associated with depression (Conradi and de Jonge, 2009; Reis and Grenyer, 2004), to overly demanding behaviour in close relationships (Berry et al., 2008), and exaggeration of negative affect (eg. Mikulincer and Shaver, 2007). Attachment avoidance was found to be correlated (medium correlations) with depression, maladaptive coping strategies, and less “needy behaviours” in interpersonal relationships, corroborating the evidence that people with avoidant attachment tend to present with compulsive independence and a suppressive regulation strategy in face of distress (eg. Mikulincer and Shaver, 2007).

With regards to interpersonal difficulties, this sample, although below a significant value, tended to have moderate scores regarding experiencing problems in dealing with others, which is again consistent with the notion of the maladaptive manner of dealing with close relationships. In this study, non-productive coping scores and solving the problem were equalised; however, from the results relating to this sample of young people with moderate levels of psychotic experiences, insecure attachment and a moderate degree of interpersonal difficulties when dealing with

others, one can conclude that they represent a population that has inadequate tools with which to manage stress.

2.1. Profile of young people with an ARMS

From the total help-seeking young people population in this study, 60.5% presented an ARMS for psychosis. This is a strong result, which again is congruent with the notion of the high prevalence of subclinical psychotic symptoms in help-seeking populations (van Os et al., 2009).

Considering the subgroup of help-seeking young people with an ARMS (n=46), the results from this study indicate that this population presents to community mental health services with significant levels of impairment. In this study we found that a mean social and occupational functioning assessment scale (SOFAS) score of 50.13 corroborates the results of other studies (e.g. Lin et al., 2011; Bechdolf et al., 2010). Therefore, and as anticipated, help-seeking young people with an ARMS demonstrate an important decline in relation to their previous social and occupational functioning, which is consistent with the notion that this deterioration is an important state marker that needs to be examined at the time of an assessment.

Considering the profile of individuals with an ARMS, in terms of age, studies have found that the most prevalent group seeking help from services is made up of young people in their early 20s (Yung et al., 1996; Klosterkotter et al., 2001; McGorry et al., 2002; Yung et al., 2003; Yung et al., 2004; Cornblatt et al., 2003; Miller et al., 2002; Mason et al., 2004). In the present study, young people with an ARMS were found to have a median age of 19 years, thus validating previous findings. The proportion of males and females with an ARMS was the same, and this result is not consistent with previous studies or with the notion that males are more likely to develop psychosis and therefore experience the prodrome (Lemos-Giraldez, 2009; Wilhite et al., 2008). This finding might indicate that for females an

underlying bias exists in accessing mental services when they present with psychotic-like experiences and a decline in their overall functioning.

In this study, the vast majority of young people with an ARMS were found to be living alone (45.7%) and were suffering from significant impairments in role functioning, as 76.1% of the ARMS participants were neither working nor studying, thereby corroborating current evidence supporting that young people with an ARMS tend to have significant impairments in psychosocial functioning (e.g. Fusar-Poli et al., 2010). In addition, the ARMS population from this study was found to engage in alcohol and drug misuse (67.4% and 63%, respectively), which is in line with the notion that people at higher risk of psychosis tend to misuse substances (e.g. Schäfer et al. (2008). The majority of the participants reported having a mental health problem (76.1%), and 71.7% referred to having a family history of mental health problems. From these, 26% referred to having a first-degree relative with psychosis, corroborating the family history trait factors/hereditary notion of the psychosis prodrome (e.g. Yung et al., 1996). These results verify the hypothesis of a psychosis continuum, as it was observed that help-seeking young people with subthreshold levels of psychotic symptoms have the same risk factors that apply to psychotic disorders, again suggesting that there is aetiological continuity between subclinical and clinical psychosis phenotypes (van Os et al., 2009).

In terms of intake criteria, in the present study the majority of participants met “attenuated psychotic symptoms” criteria ($n=40$, 52.6%), 12 (15.8%) met “vulnerability criteria” and one (1.3%) met “BLIPS” criteria. There was a considerable degree of overlap between the groups, with seven participants belonging to more than one ultra-high-risk group. These results are consistent with the findings of most studies (Yung et al., 2003; Raballo et al., 2011; Lin et al., 2011; Demjaha et al., 2012; Mason, 2004; Broome et al., 2005); however, in the original PACE Clinic study (Yung et al., 2003), although young people were found to have predominantly attenuated psychotic symptoms, they were found to have them in combination with other diagnostic features. In line with the results and arguments posited by Broome et al. (2005), UK researchers may find it easier to identify this

criterion. Furthermore, attenuated psychotic symptoms are more likely to enable the client to access healthcare or consider seeking help.

In terms of psychotic symptoms, and considering the CAARMS UHR criteria subscales, in this study the results revealed that the experience of perceptual abnormalities and unusual thought content are the most severe and distressing positive psychotic symptoms for help-seeking young people with an ARMS. These findings are consistent with studies that have found that these were the most prevalent in this respect in those who later transited to psychosis (e.g. Yung et al., 2004; Mason et al., 2004).

Regarding attachment classification, in this study, help-seeking young people with an ARMS were found to present with high levels of attachment anxiety and high levels of attachment avoidance. These results corroborate the evidence of high attachment anxiety and high attachment avoidance in people presenting with positive psychotic symptoms (eg. Berry et al., 2007; extensively reviewed in Gumley et al., 2013) and for the purposes of this thesis, corroborate the evidence found in ARMS populations (Gajwani et al., 2013).

According to the Hospital Anxiety and Depression Scale results in this study, young people with an ARMS were found to have clinically significant levels of both depression and anxiety. This is consistent with the results of several research studies which have observed these clinical diagnoses as the most prevalent in ARMS populations (systematically reviewed in Fusar-Poli et al. 2014), and it suggests that this population presents core emotional dysregulation processes in addition to psychotic symptoms that may impact on their ongoing psychopathology, global functioning and overall longitudinal outcomes (Fusar-Poli et al., 2014). Moreover, the results obtained from the general psychopathology subscale of the CAARMS corroborate the perception that this sample of young people with an ARMS suffers from significant levels of emotional distress.

Results from this study indicate that this population of young people with an ARMS do not have deficiencies in terms of either the emotional or the practical

support they receive from the community mental health services; however, the results are consistent with those found in clinical groups by Power, Champion & Aris (1988), authors of the significant other scale. In this thesis, young people with an ARMS reported discrepancies between perceived actual emotional and practical support received and their ideal solution, consistent with the findings of Neeleman and Power (1994), who found discrepancies in emotional support, from 0.9 to 1.5, across three psychiatric groups experiencing deliberate self-harm, depression and psychosis, and discrepancies in practical support, from 0.8 to 1.1.

Young people with an ARMS were found to have difficulties in dealing with their interpersonal relationships, and they tended to use non-productive coping strategies, which is consistent with current evidence which shows that people with ARMS tend to experience poor psychosocial functioning and use maladaptive ways of regulating stress (e.g. Jalbrzikowski et al., 2014; Philips et al., 2011).

3.1. Research Question 1: “Does attachment insecurity predict the risk of developing psychosis?”

Using path analysis, higher attachment anxiety and higher attachment avoidance were found to predict directly higher levels of psychotic symptomatology in a sample of help-seeking young people who presented to community mental health services with psychological maladjustment and distress. This is a replication of recent findings in samples diagnosed with a psychotic disorder (eg. Berry, Barrowclough and Weardern, 2007a), in patients with an FEP (Ponizovsky et al., 2013) and in young people with an ARMS (Gajwani et al., 2013).

Specifically, in this thesis, higher attachment anxiety and higher attachment avoidance were found to have greater impact on the variables associated with severity and distress related to unusual thought content, and in the distress associated with perceptual abnormalities. These associations between avoidant and anxious attachment and positive symptoms support cognitive models of psychosis, which propose that negative beliefs and social withdrawal play a role in the maintenance of

positive symptoms (Garety et al., 2001) Associations between attachment and symptoms support cognitive models of psychosis, but more importantly suggest that attachment theory in its own right may provide a useful framework to understand the development and maintenance of psychotic symptoms.

These results are also consistent with studies in psychotic and FEP samples, where attachment insecurity has been found to impact on the severity and distress related with delusions and bizarre ideas, as well as with the distress caused by the experience of hallucinations (Ponizovsky et al., 2013; Birchwood & Chadwick; 1997; Berry et al., 2009). These findings indicate that not only the experience of delusions, but also essentially the distress associated with the experience of positive symptoms (mainly delusions, bizarre ideas, hallucinations or reality distortions) are related to maladaptive working models employed to deal with stress, which were acquired during childhood experiences with early caregivers, that may influence the relationship between voices and subsequent levels of distress (Birchwood et al., 2000; Berry et al., 2007; Berry et al., 2008; Berry et al., 2009). In line with the arguments of Birchwood et al. (2000), power imbalances between the individual and notions of persecution may have origins in how the individual appraises his social world and the sense of group identification and belonging. Given the lack of research regarding the relationship between higher attachment insecurity and the heightened risk of psychosis in help-seeking young people with subthreshold psychotic symptoms and high levels of psychological distress, the results from this thesis provide an important addition to current knowledge.

When the relationship between higher levels of attachment anxiety and attachment avoidance and heightened risk of psychosis was tested, by only considering those in an at-risk mental state, the results revealed that in the model all possible associations between the predictors and the outcome variables were statistically significant, with perfect fit indices. When this occurs, and according to statistical assumptions of path analysis (Arkubucle, 2012), one should consider that the model is saturated, usually because of the small sample size.

Thus, and although in this thesis one cannot assume a relationship between attachment insecurity and increased risk of psychosis symptoms in young people with an defined ARMS, the results for help-seeking young people with high levels of psychological distress, and the results from studies supporting this relationship in samples with an FEP and with a diagnosed psychotic disorder, strongly suggest that this relationship is also present in samples with an ARMS.

Actually, there is evidence supporting that the transitory developmental expression of psychosis (psychosis proneness) may become abnormally persistent (persistence) – and subsequently clinically relevant (impairment) – depending on the degree of environmental risk to which the person is additionally exposed (Johns and van Os, 2001). Also in line with this notion is the argument of Krabbendam et al. (2004), who posit that transitions into the psychosis continuum may be driven in part by cognitive and emotional responses to psychotic-like experiences.

The sample of young people in the present thesis was recruited from community mental health services and was therefore a help-seeking population with a significant degree of exposure to environmental risk factors and meaningful levels of emotional distress. Add mild to moderate levels of psychotic experiences, and one may assume that they were at elevated risk of psychosis (considering a continuity paradigm). Based on these findings, future studies should use a larger ARMS sample, to test the relationship between dysfunctional working models for dealing with stress (high attachment anxiety and high attachment avoidance) and psychotic symptoms.

3.2. Research Question 2: “Do interpersonal difficulties, coping strategies, social support and emotional distress mediate or moderate the effects of attachment insecurity in relation to the risk of developing psychosis?”

Whereas the majority of the evidence focuses on populations with psychosis and attachment associations, this thesis investigated the causal pathways and mechanisms fundamental to these relationships. Assuming that not all individuals

with an insecure attachment develop psychosis, it has to be concluded that there are other factors within the relationship between attachment and psychotic symptomatology that play a role in the increased expression of positive psychotic symptoms. To understand the results retrieved from the path analysis models, these will be discussed by considering the two samples against which the hypotheses were tested: the total help-seeking young people group and those only with an ARMS for psychosis.

In this thesis, neither coping strategies nor interpersonal problems were found to be mediators between attachment and the risk of psychosis in a sample of help-seeking young people. These results are inconsistent with the results found by Bartholom

To the author's knowledge, this is the first study to explore these underlying mechanisms in this type of population. Regarding coping, studies support the association between attachment insecurity, less effective methods for dealing with stress and higher levels of psychopathology (Dozier and Lee, 1995), and there is also evidence of a relationship between attachment insecurity and the use of maladaptive coping strategies in samples diagnosed with a psychotic disorder (Tait et al., 2004). I further hypothesised that coping could mediate the relationship between attachment insecurity and increased risk of positive psychotic symptoms. However, in this sample of help-seeking young people, coping did not act as a mediator in this relationship; nevertheless, when the assumption that coping could mediate the relationship between attachment insecurity and the increased risk of positive psychotic symptoms, albeit only in those young people with an ARMS, the results revealed that a negative productive coping strategy for dealing with stress was a mediator between both attachment anxiety and avoidance (more robustly in the attachment anxiety dimension) and the distress associated with the experience of perceptual abnormalities.

These findings can be discussed from two different angles. Firstly, when considering that coping does not mediate the relationship between attachment insecurity and the increased risk of positive psychotic symptoms in a help-seeking

population of young people, but that it does mediate this relationship when young people present with an at-risk mental state, we can suggest that coping mechanisms are only triggered when symptoms become more prominent and distressing – as observed in populations with an ARMS, an FEP and with a defined form of psychosis (e.g. Dangelmaier, 2006; Ponizovsky et al., 2013; Tait, Birchwood and Trower, 2004).

Secondly, the results indicate that young people with an ARMS who have an insecure attachment, particular high attachment anxiety, and thus an ineffective stress management mechanism, tend to use less adaptive strategies, thereby making them perceive their perceptual abnormalities as more distressing. This finding is consistent with the study by Bak et al. (2005) and can be explained considering the cognitive models for psychosis (Garety et al., 2001). This sample of help-seeking young people with an ARMS, from adverse environments and with dysfunctional schemas of the self and the world, upon encountering a stressor are faced with an activation of disturbed affect in their regulation mechanisms that lead to an externalising appraisal and, consequently, delusional beliefs and hallucinations. Considering that in this thesis less productive coping was found to mediate this relationship, it can be further suggested that the tendency to use maladaptive patterns of stress regulation (which were acquired based on early experiences with caregivers) activates an augmented stress response to the experience of perceptual abnormalities, placing these individuals at higher risk of developing psychosis, due to their inability to deal internally with the stressful experience of hallucinations.

Regarding interpersonal problems, studies have found that higher levels of difficulty in dealing with others are associated with attachment insecurity and with higher risk of psychosis (e.g. Bartholomew & Horowitz, 1993; Berry et al., 2007).

Moreover, researchers have also in non-clinical samples found that attachment insecurity is associated with higher levels of interpersonal problems (Berry et al., 2006). Although the results from the univariate analysis (Table 20) showed that young people with subthreshold psychotic symptoms, and particularly those with an ARMS to report interpersonal difficulties in dealing with others, when

the variable interpersonal problems were tested in the mediation analysis the results were non-significant.

Specifically, I hypothesised that interpersonal problems which arise from early attachment experiences could mediate the relationship between attachment insecurity and the risk of psychosis. However, in this help-seeking population of young people, higher levels of interpersonal problems do not mediate the relationship between attachment insecurity and the risk of psychosis. One may further consider that in this specific population of young people, who had sought help from community mental health services and experienced high levels of environmental stress, it is not the difficulties related with interpersonal relationships but with their attachment insecurity that intensify positive psychotic symptoms.

In accordance with the literature, the hypothesis that social support mediates the relationship between attachment insecurity and the heightened risk of psychosis was examined, in order to comprehend further the effects of this construct as a potential buffer for the deleterious effects of attachment insecurity in the risk of developing psychosis. However, the results retrieved from path analysis models showed that in this population of help-seeking young people, social support does not have an effect. This was also observed when considering only those with an ARMS.

Nevertheless, this thesis did find one interesting rationale. Discrepancies between ideal and practical perceived emotional and practical social support were found to mediate fully the impact of attachment anxiety in the distress associated with disorganised speech. This finding validates the literature from the point of view that the quality of social support acquired in relationships is an important mechanism in psychological adjustment (Champion, 1995; Ana & Barnet, 1999).

Actually, the results revealed that dissatisfaction with the support received from significant others has an important mediating effect in the relationship between attachment anxiety and developing distress associated with thought disorders in help-seeking young people. Considering that individuals with high attachment anxiety tend to be incoherent and exaggerate emotionally in close relationships, one may

further suggest that these individuals tend to be more dissatisfied with the support they receive from significant others and then go on to have high distress levels associated with the experience of disorganised thought, as they cannot judge coherently the support there are receiving from others as sufficient.

This is consistent with the literature when considering an association between higher levels of discrepancies in social support received from significant others and with greater difficulties in dealing with close relationships (Champion et al., 1995) with increased levels of psychopathology (Power et al., 1988; Schuldberg, 1996).

Although there is a lack of research on the mediating role of social support, specifically in regard to the increased risk of positive psychotic symptoms, the study by Larose & Bernir (2001) found a relationship between preoccupied attachment and stress related to seeking help, and that help-seeking behaviour mediated the relationship between preoccupied attachment and loneliness. In patients with an FEP, anxiety has been suggested to be a pathway through which loneliness leads to paranoia (Sundermman et al., 2013). Thus, dissatisfaction with social support, which can lead to loneliness, might be a result of attachment anxiety, which is in line with cognitive model for psychosis can form positive psychotic symptoms (Garety et al., 2001) and, as found specifically in this thesis, disorganised thought processes.

This thesis established that emotional dysfunction plays an additive role in the impact of attachment insecurity in the risk of psychosis in a sample of help-seeking young people, thereby supporting the argument by Morrison et al. (2012) regarding the fact that emotional dysfunction is intrinsically linked to the acceleration of psychotic experience, possibly through negative appraisal (as threat-related or loss-related), and it can therefore predict an increase in the severity of psychosis. This is also consistent with cognitive models for the development of psychotic symptoms (Garety et al., 2001), and it agrees with the proposition that emotional dysfunction has a co-variation effect on interpersonal traumas (related with attachment insecurity) and places one at higher risk of psychotic experiences. Moreover, these results further support the arguments of Birchwood (2003), in that psychosis is the product of an emotionally disturbed developmental pathway.

In conclusion, results of the exploratory assumptions of the underlying mechanisms of coping, interpersonal problems, social support and have found that they play mediating roles in the relationship between attachment and the heightened risk of psychosis in help-seeking young people, whereas emotional distress was found to play a moderating role. Specifically, less productive coping was found to mediate the effect of attachment insecurity, particular attachment anxiety in the distress associated with perceptual abnormalities, but only in those individuals with an ARMS for psychosis. Discrepancies in the amount of social support received fully mediate the effect of attachment anxiety in the distress associated with disorganised thinking in a wider group of help-seeking young people. Emotional distress has been found to exacerbate further the effect on attachment insecurity in relation to the risk of psychosis. These results have powerful implications for future clinical work within this particular population of help-seeking young people.

4. Clinical Implications

The findings from the sample in the present thesis indicate that help-seeking young people usually present to mental health services with disturbances in unusual thought content, distressing perceptual abnormalities and significant psychopathology, particularly depression and anxiety. This profile is even more pronounced when considering young people with an ARMS.

Results generated in this study indicate that these young individuals tend to adopt maladaptive coping strategies to deal with stress, and they have difficulties in dealing with interpersonal relationships, derived from early dysfunctional experiences acquired during childhood, and therefore they are likely to benefit from appropriate identification and treatment.

Considering the profile of help-seeking young people overall, and specifically those with an ARMS presented herein, in terms of treatment the author of this thesis strongly supports the stepwise care proposed by the clinical staging model of

prodromal prevention (McGorry et al., 2006). Thus, clinicians should be trained in psychological therapies, in order to provide patients with formal CBT and to help young people deal with their positive psychotic symptoms. As established by Morrison et al. (2012), cognitive therapy can reduce the frequency and intensity of psychotic experiences, without the need for antipsychotics. More importantly, interventions should also target a reduction in the distress caused by the experience of positive psychotic symptoms.

In the present thesis, alongside maladaptive levels of social functioning, help-seeking young people overall, and specifically those with an ARMS, were found to have difficulties in interpersonal relationships, non-productive coping mechanisms used to manage stress and dissatisfaction with social support received versus their ideal scenario.

Importantly, help-seeking young people, and importantly those with an ARMS, were found to have high levels of depression and anxiety and to have high levels of attachment anxiety and attachment avoidance thus adding an extra barrier to dealing with their symptoms and with others. Thus, more than just a clear focus on the reduction of the severity of psychotic experiences, psychological therapies should also incorporate an interpersonal perspective (e.g. interpersonal psychotherapy) to help young people further in their emotional needs and to help them respond appropriately to the care provided.

Specifically, the direct prediction of insecure attachment, in relation to the experience of positive psychotic experiences in this help-seeking population, provides evidence to support the need for interventions based on an interpersonal approach, whereby the therapist helps the patient to overcome dysfunctional attachment patterns. Based on the results of this study, the insights gained from attachment theory also open up the possibility of understanding and reducing negative interactions between patients and clinical staff. If clinicians could understand difficult interpersonal behaviours in terms of attachment styles that were functional in the context of past experiences with significant others, they would be less inclined towards negatively appraising such behaviours and consequently less

inclined towards critical or hostile attitudes towards the patient (Berry et al., 2008). It may also be possible to maximise engagement and clinical effectiveness by varying therapeutic approaches in accordance with patients' attachment styles. For example, individuals with avoidant attachment may benefit from interventions which encourage them to focus on their emotional reactions, whereas those with anxious attachment would benefit from approaches which minimise the focus on emotional distress (Tyrrell, Dozier, Teague, & Fallot, 1999, in Berry et al., 2008).

This interpersonal approach could also have a beneficial effect on reducing perceived discrepancies in social support that were found in this study, as the therapist could facilitate communication between the young person and their social support network regarding the emotional and practical support they require and receive. Actually, Rabiovitch et al. (2009) found that a lack of social support was a predictor for non-adherence to intervention treatment, thus emphasising the need for psychosocial interventions in improving social support in early psychosis. Furthermore, improving the ability of young people to understand their own and others' mental states may help them to maintain helpful and supportive relationships, thus reducing their interpersonal difficulties. This could also provide them with more functional skills to help regulate their emotions at times of distress, thereby leading to better ways of adapting to their positive psychotic symptoms, and thus reducing distress and improving outcomes.

The fact that the majority of young people in this thesis reported high levels of drug and alcohol misuse further emphasises the need to active substance-abuse reduction strategies, also consistent with the clinical staging model of intervention for young people with both subthreshold levels of psychotic-like experiences and with an ARMS.

The findings of this thesis have important implications for the current at-risk mental state paradigm. The results revealed that young people with subthreshold psychotic symptoms have co-occurring affective symptoms, and the occurrence of these emotional dysfunctions, when triggered in young people with maladaptive patterns of emotional regulation (acquired during early interpersonal experiences),

exacerbate the expression of psychotic symptoms. This supports suggestions for incorporating depression and anxiety in at-risk mental state criteria, in order to identify a higher risk sample (Morrison et al., 2012).

This thesis showed that a help-seeking population of young people is clearly distressed, and future research should therefore consider a longitudinal approach to investigating the affective and interpersonal concepts explored in this thesis, in order to test the stability of these findings.

In addition, further studies should aim at testing the influence of an integrated psychological intervention approach that includes the delivery of interventions not only targeting the reduction of the severity and the distress associated with psychotic symptoms, but also targeting a reduction in emotional disorders.

5. Strengths and Limitations

To the best of my knowledge, this is the first study to characterise young people seeking help from community mental health services in Scotland. While most of the studies in ARMS populations tend to adopt a recruitment strategy targeting only Child and Adolescent Mental Health Services and Adult Mental Health Services teams, this thesis adopted a different strategy, and so patients were recruited from both NHS and non-NHS sites. This approach was chosen in order to reduce recruitment bias observed in a number of studies in the field of the early identification of psychosis, which had reported an over-reliance on the referrals of mental health professionals working purely within the NHS. Likewise, to lessen potential recruitment bias, the author of this study regularly attended team meetings to understand if there were potential young people available who met the study inclusion criteria, and to provide ARMS and CAARMS training to the mental health professionals and keyworkers at both NHS and non-NHS sites.

Although the sample size of 76 young people in the overall sample, and a subgroup size of 46 young people with an ARMS, may be considered modest when

compared to multi-site international studies, it is considered adequate given the fact that this particular section of the population is difficult to recruit. Also, the fact that the time frame for this study was limited, and that the author conducted all data collection and coding, can be considered a major strength of this project. Furthermore, the results derived from this study corroborate the profile of young people with an ARMS similar to international multi-site studies, confirming the author's ability to recruit this complex and hard-to-reach young people for research purposes.

In terms of limitations, it must be considered that the study was cross-sectional in nature, which would prohibit the ability to monitor the group across time in clinical presentation. Although initially this thesis proposed to conduct six- and 12-month follow-ups, this proposal was abandoned, as most of the participants were from community mental health services and had left these services at the time of the follow-up. A longitudinal approach would enrich this dataset and help to examine if help-seeking young people with known environmental risk factors and moderate levels of positive psychotic experiences might develop a prodrome. Additionally, it would help to understand transition and remission rates for the subgroup with an ARMS, and it would also be constructive to understand the developmental trajectory of these young people.

The use of path analysis can be considered a major strength of the present thesis, as it is a powerful statistical technique for examining complex models, and for comparing different models, to determine which one best fits the data. However, path analysis cannot be used to establish causality or even to determine whether a specific model is correct; it can only determine whether the data are consistent with the model. A limitation of this study is the small sample size, which may have increased the possibility of type II errors, so there is a need for caution when interpreting statistically significant results.

Another limitation is related to potential assessment bias. Research in the field of mental health has a tendency to either suppress or to over-score symptoms. Although these potential caveats exist, the author of this thesis undertook training

and has clinical experience in engaging and working with clinical populations. Furthermore, the data provided were cross-referenced, when necessary and where possible, with information provided by medical records, social workers and mental health professionals working with these young people.

6. Conclusions

To my knowledge, this is the first study investigating psychological underlying mechanisms involved in the increased risk of expression of psychotic symptoms in help-seeking young people. This thesis provided robust evidence of the relationship between attachment insecurity, emotional dysfunction and the increased expression of psychotic symptomatology in help-seeking young people and contributes to the current understanding of the psychological distress experienced by this vulnerable population. Furthermore, it aids knowledge to the current status of the at-risk mental state of psychosis paradigm.

This work demonstrated a connection between attachment insecurity dimensions and the increased expression of psychotic symptoms in young people who seek help for psychological distress. Furthermore, the experience of emotional distress was found to increase the severity and the distress associated with the experience of psychotic symptoms, thus, providing evidence to the current debate concerning that emotional disturbances should be considered as necessary conditions for the onset of psychosis (eg. Morrison et al. 2012).

The high levels of attachment avoidance and anxiety found in this group of help-seeking young people reflects a probable functional, albeit defensive, mechanism whereby the individual over regulates their emotions and refuses to consider the mental states of themselves and others. Discrepancies between ideal and received social support fully mediated the relationship between attachment insecurity and the distress associated with disorganised speech, while the tendency to use less adaptive coping strategies was found to mediate directly the relationship between attachment anxiety and the distress associated with perceptual abnormalities in young people

with an ARMS.

The findings derived from this thesis strongly indicate that clinicians should take into consideration the mechanisms of attachment, coping strategies and social support, as well as the deleterious effects of associated emotional distress, when working with young people experiencing psychotic symptoms. Therapeutic interventions that focus on helping young people to become aware of their own and others mental states, that focus on achieving an emotional homeostasis, and a secure base from which to explore owns and others mental states, are essential to achieve good clinical outcomes in young people experiencing psychotic symptoms. The developmental period of adolescence provides a unique challenge in terms of negotiating complex cognitions and emotions. By helping young people to adapt their dysfunctional strategies or replace them with a functional one, the subsequent development of emotional distress and psychotic symptomatology may be halted or the at least, the effect diminished.

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